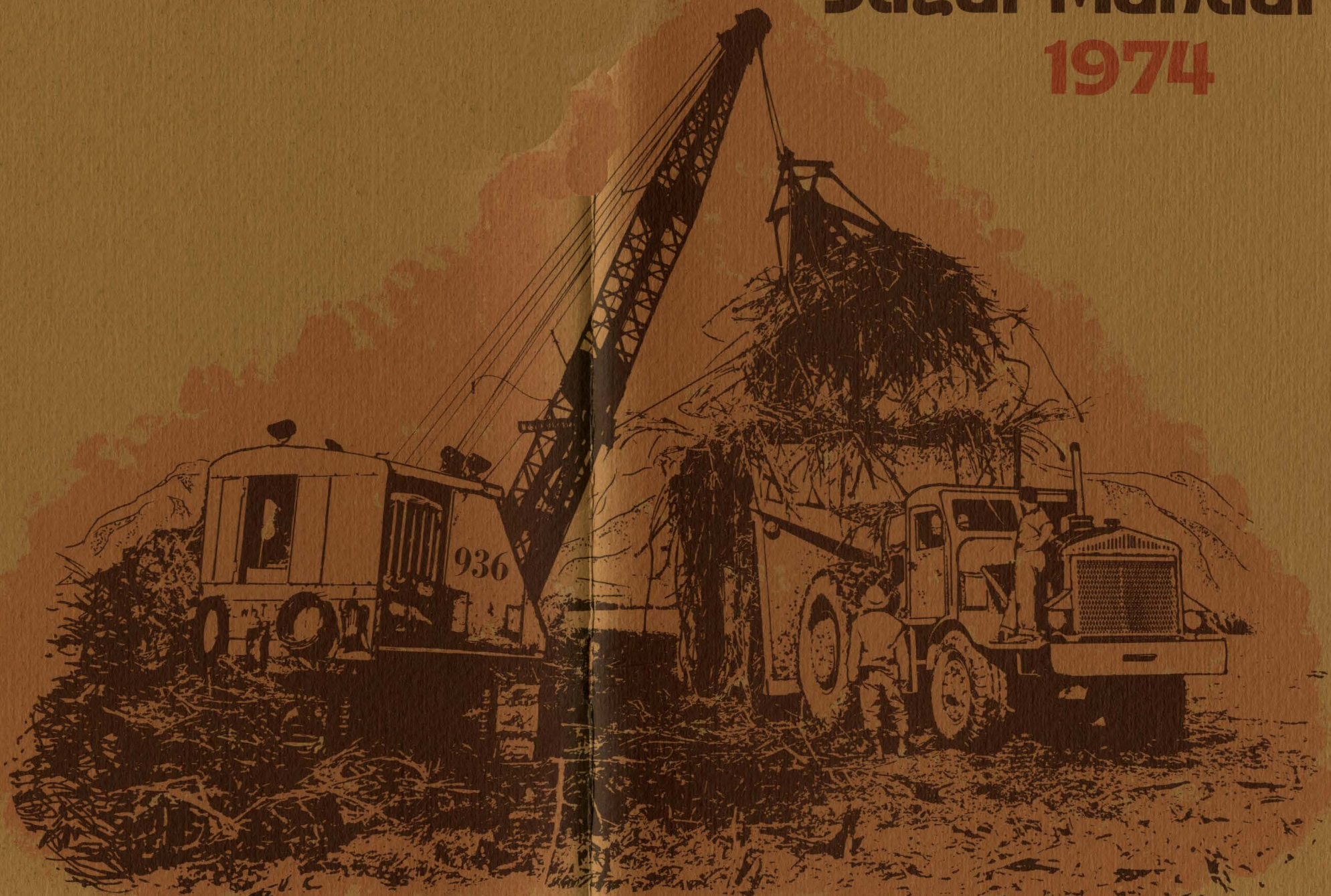


**Hawaiian**  
**Sugar Manual**  
**1974**





# HSPA SUGAR MANUAL 1974

PUBLISHED BY

## Hawaiian Sugar Planters' Association

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*Footnote:* Numbers indicate sugar companies represented. See sugar company directory, page 2. Asterisk indicates those board members serving on HSPA Executive Committee.

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## HAWAIIAN SUGAR COMPANIES

### ISLAND OF KAUAI

GAY & ROBINSON  
Makaweli, Kauai 96769  
Phone: 338-8233

KEKAHA SUGAR CO., LTD.<sup>1</sup>  
L. A. Faye, Jr., *Mgr.*  
Kekaha, Kauai 96752  
Phone: 337-1472

THE LIHUE PLANTATION COMPANY, LTD.<sup>1</sup>  
D. W. Ballie, Jr., *Mgr.*  
Lihue, Kauai 96766  
Phone: 245-2112

McBRYDE SUGAR CO., LTD.<sup>3</sup>  
P. F. Conrad, *V.P., Ops. Mgr.*  
Eleele, Kauai 96705  
Phone: 335-5333

OLOKELE SUGAR CO., LTD.<sup>4</sup>  
R. F. Cameron, *Mgr.*  
Kaumakani, Kauai 96747  
Phone: 335-5337

### ISLAND OF OAHU

OAHU SUGAR CO., LTD.<sup>1</sup>  
J. T. Humme, *V.P., Mgr.*  
Waipahu, Oahu 96797  
Phone: 677-3577

WAIALUA SUGAR CO., INC.<sup>2</sup>  
W. W. Paty, Jr., *Exec. V.P., Mgr.*  
Waialua, Oahu 96791  
Phone: 637-4520

### ISLAND OF MAUI

HAWAIIAN COMMERCIAL & SUGAR COMPANY<sup>8</sup>  
W. S. Haines, *Ops. Mgr.*  
Puunene, Maui 96784  
Phone: 877-0081

PIONEER MILL CO., LTD.<sup>1</sup>  
J. W. Siemer, *Pres., Mgr.*  
Lahaina, Maui 96761  
Phone: 661-0592

WAILUKU SUGAR COMPANY<sup>4</sup>  
D. J. Martin, *V.P., Mgr.*  
Wailuku, Maui 96793  
Phone: 244-9570

### ISLAND OF HAWAII

HILO COAST PROCESSING CO.<sup>4\*</sup>  
W. Kenda, *Pres.*  
Pepeekeo, Hawaii 96783  
Phone: 963-6211

HONOKAA SUGAR COMPANY<sup>5\*\*\*</sup>  
P. E. Bouvet, *Mgr.*  
Haina, Hawaii 96709  
Phone: 775-7261

KA'U SUGAR COMPANY, INC.<sup>4\*\*</sup>  
J. H. Hewetson, *V.P., Mgr.*  
Pahala, Hawaii 96777  
Phone: 928-8311

KOHALA CORPORATION<sup>2</sup>  
A. C. Stearns, *V.P., Mgr.*  
Hawi, Hawaii 96719  
Phone: 889-6426

LAUPAHOEHOE SUGAR CO.<sup>5</sup>  
F. C. Schattauer, *Mgr.*  
Papaaloa, Hawaii 96780  
Phone: 962-6314; 962-6244

MAUNA KEA SUGAR COMPANY, INC.<sup>4\*\*\*\*</sup>  
H. M. Gomez, *V.P., Mgr.*  
Papaikou, Hawaii 96781  
Phone: 964-1025

PUNA SUGAR CO., LTD.<sup>1</sup>  
T. J. O'Brien, *Mgr.*  
Keaau, Hawaii 96749  
Phone: 966-9270

\*Sugarcane milling company cooperatively owned by United Cane Planters Cooperative, and Mauna Kea Sugar Co.

\*\*Hawaiian Agricultural Company and Hutchinson Sugar Co., Ltd. merged to form Ka'u Sugar Co., Inc.

\*\*\*Paauhau Sugar Co., Ltd. assets purchased by Honokaa Sugar Co. 12/31/72.

\*\*\*\*Mauna Kea Sugar Co., Inc. merged with Pepeekeo Sugar Co. to form the Mauna Kea Sugar Co.

## Part I

### HAWAII'S SUGAR INDUSTRY

Although Hawaii had predominantly an agricultural economy for more than 100 years, events since World War II have changed the principal basis from agriculture to tourism and military expenditures.

In 1973, the Hawaiian economy received \$890 million in direct tourist expenditures and \$872 in military expenditures.

Sugar ranked third in income for the State, bringing in over \$232 million.

Pineapple was the fourth largest income producer in the State and added about \$130 million to the local economy for the 1972-73 pack year. Diversified agriculture in the State delivered an additional \$82 million worth of produce to markets in and out of Hawaii.

Because Hawaii must import most of her food and other essentials from the U.S. Mainland, the out-of-state shipments of sugar and fresh or canned pineapple products are important in the State's balance of trade.

#### SUGAR INDUSTRY

Hawaii's sugar industry is recognized as one of the world's leaders in sugar technology and production.

Sugarcane was growing in Hawaii when the Islands were discovered by Capt. James Cook in 1778. Although there may have been earlier attempts to produce sugar from the sugarcane, the first actually documented crushing of sugarcane was by a Spaniard, Don Francisco de Paula Marin in Honolulu in 1819. In March of that year he noted in his diary that he extracted juice from the sugarcane.

The first actual plantation in Hawaii was started in 1825 in Manoa on Oahu, but this venture failed.

In 1835, a plantation was started at Koloa on the island of Kauai, and these fields are still growing sugarcane today.

The first sugar was produced at the Koloa plantation in 1837 according to reports which showed 5,039 pounds of sugar and 400 gallons molasses sent out by ship.

Sugarcane plantations spread throughout the Kingdom of Hawaii. In 1886, production was 100,000 tons, the 250,000 ton mark was reached in 1897 and in 1908, production was 500,000 tons.

Production reached more than one million tons in the 1930-31 sugar year. In 1973, a total of 1,128,000 tons of sugar and 301,000 tons of molasses were produced in Hawaii.

#### GROWING SUGAR IN HAWAII

Hawaii's sugar industry is unique among the

sugarcane growing countries of the world. It is the only area where the average age of sugarcane is two years at the time of harvest.

Hawaii's sugar industry is one of the most highly mechanized in the world. Hand labor has been virtually eliminated.

The climate of Hawaii varies considerably. Tropic rain forests can be found within a few miles of desert conditions.

On some sugar lands average rainfall is as low as 15 inches a year. On others, the rainfall is as high as 212 inches a year. One sugar company reported that its mountain fields receive an average of 133 inches of rain a year while its fields near the ocean shoreline receive only about 20 inches.

Because of the lack of adequate rainfall in some areas, about half of Hawaii's sugar lands must be irrigated.

The irrigated fields produce about two-thirds of the total Hawaii sugar produced each year. Scientists and engineers are constantly seeking new and better ways to use the irrigation water such as the recently developed drip irrigation system. The water systems, including many miles of tunnels, dikes and ditches, were designed and built by the sugar companies without any governmental assistance or contributions.

#### PLANTING AND HARVESTING

Sugarcane is planted by using pieces of cane stalks as "seed." These seed pieces are cut from growing sugarcane.

Sugarcane is planted by machines which drop the sugarcane pieces in rows and then cover the pieces with soil.

About half of Hawaii's sugar lands are harvested each year. When sugarcane is harvested, it grows again from the old stubble left in the ground. From two to four ratoon crops are obtained from each original planting. Then the field is plowed again and replanted with new seed pieces.

The fields are burned before harvesting to get rid of the dried leaves matted in the fields. The burning does not harm the sugarcane stalks and it cuts down on the amount of useless leaves and trash that would otherwise be sent through the sugar mills. The burning also helps in pest control for the fields.

After the fields are burned, mechanical harvesters are used. These push the cane into windrows where giant grab cranes load the cane into tractor-trailers which haul the cane to the mill for processing into raw sugar.

Some plantations use a V-cutter, which has a v-shaped blade with a vertical cutting wheel at the front. The cane cut by this machine is also loaded with grab cranes after it is picked up and taken to the edge of the field.

Newer developments include mechanical har-



vesters now being used by some non-irrigated plantations. These harvesters cut the cane, chop it into short lengths and use forced air to blow much of the trash and soil from the cane. Engineers are seeking new ways in which cane can be harvested and cleaned more efficiently.

### **RAW SUGAR TO THE U.S. MAINLAND**

Approximately 97 percent of all Hawaiian raw sugar is shipped to the U.S. Mainland for refining. The other three percent is processed at

the California and Hawaiian refinery in Aiea, Hawaii, for Hawaiian and Pacific Basin consumption.

All Hawaii raw sugar is transported in bulk form. The bulk sugar is loaded on ships from bulk terminals at Kahului, Maui; Hilo and Kawaihae, Hawaii; Honolulu, Oahu; and Nawiliwili on Kauai.

In 1973, the shipment of raw sugar from Hawaii to the mainland accounted for 64 vessel sailings.

### **SUGAR SHIP SAILS THE SEAS**



*The MV Sugar Islander, largest oceangoing bulk cargo carrier ever built in a U.S. shipyard, made its first visit to Hawaii in September 1973.*

*The \$17.3 million ship is under charter to California and Hawaiian Sugar Co. She carries Hawaii-produced raw sugar to the Mainland and returns to Hawaiian or other Pacific area ports with grains. The ship is 641 feet long and 77 feet wide at her widest point. She has a capacity of 28,115 long tons.*

*The Sugar Islander was built by Lockheed Shipbuilding and Construction Co.*

# HAWAIIAN SUGAR COMPANIES BY ISLANDS, WITH ACREAGE AND PRODUCTION FOR 1973 (Raw Value)

	Total Caneland Acreage	Acreage Harvested	Production (Short tons)
<b>HAWAII</b>			
Hamakua Mill Co. ....	8,225.00	3,517.00	33,222
Hilo Coast Processing ..... (Processor only)			125,599
Mauna Kea Sugar Co., Inc. ....	17,610.00	8,603.00	(Cane proc- essed and sugar produced by Hilo Coast Processing)
United Cane Growers Coop. ....	7,886.00	3,987.00	
Honokaa Sugar Co. ....	15,693.00	6,615.00	66,391
Ka'u Sugar Co., Inc. ....	18,957.26	5,897.50	54,284
Kohala Sugar Co. ....	8,730.00	6,634.25	37,255
Laupahoehoe Sugar Co. ....	10,396.28	4,508.56	47,851
Puna Sugar Co., Ltd. ....	14,368.05	6,500.40	57,934
<b>TOTAL HAWAII</b> .....	<b>101,895.59</b>	<b>46,263.18</b>	<b>422,536</b>
<b>KAUAI</b>			
Gay & Robinson .....	2,639.71	1,280.33	16,915
Grove Farm Co., Inc.* .....	10,085.00	4,821.00	39,901
Kekaha Sugar Co., Ltd. ....	7,879.22	4,036.65	54,413
The Lihue Plantation Co. ....	14,965.38	8,331.23	72,605
McBryde Sugar Co., Ltd. ....	5,952.67	2,813.97	30,832
Olokele Sugar Co., Ltd. ....	4,775.24	2,305.33	30,977
<b>TOTAL KAUAI</b> .....	<b>46,297.22</b>	<b>23,588.51</b>	<b>245,643</b>
<b>MAUI</b>			
Hawaiian Commercial & Sugar Co. ....	31,353.00	15,436.00	187,064
Pioneer Mill Co., Ltd. ....	9,337.20	4,760.40	53,462
Wailuku Sugar Co. ....	5,007.40	2,527.80	27,712
<b>TOTAL MAUI</b> .....	<b>45,697.60</b>	<b>22,724.20</b>	<b>268,238</b>
<b>OAHU</b>			
Oahu Sugar Co., Ltd. ....	19,348.00	9,532.31	118,074
Waialua Sugar Co., Inc. ....	13,342.00	6,081.07	74,038
<b>TOTAL OAHU</b> .....	<b>32,690.00</b>	<b>15,613.38</b>	<b>192,112</b>
<b>TOTAL—ALL ISLANDS</b> .....	<b>226,580.41</b>	<b>108,189.27</b>	<b>1,128,529</b>

\* 1973 was the last year of sugar production for Grove Farm. Its sugarcane lands were taken over by The Lihue Plantation Co. and McBryde Sugar Co. in December, 1973.



## COMPARISON OF AVERAGE RAW SUGAR PRICE AND AVERAGE DAILY EARNINGS FOR NON-SUPERVISORY EMPLOYEES IN HAWAIIAN SUGAR INDUSTRY

	<i>Average New York Raw Sugar Price cwt. (Hawaiian Basis)*</i>	<i>Average Daily Earnings<sup>1</sup></i>
1935.....	\$3.23	\$1.699
1936.....	3.60	1.884
1937.....	3.45	2.074
1938.....	2.93	2.134
1939.....	2.98	2.170
1940.....	2.78	2.180
1941.....	3.39	2.479
1942.....	3.74	2.900
1943.....	3.74	3.590
1944.....	3.74	3.910
1945.....	3.75	5.100
1946.....	4.59	5.275
1947.....	6.22	7.632
1948.....	5.56	8.024
1949.....	5.81	8.040
1950.....	5.93	8.300
1951.....	6.06	9.000
1952.....	6.26	9.700
1953.....	6.29	10.200
1954.....	6.09	10.580
1955.....	5.95	10.62
1956.....	6.09	10.73
1957.....	6.25	11.20
1958.....	6.27	12.78
1959.....	6.24	12.84
1960.....	6.31	13.18
1961.....	6.30	14.11
1962.....	6.45	14.96
1963.....	8.20	16.68
1964.....	6.90	17.60
1965.....	6.75	18.40
1966.....	6.99	19.76
1967.....	7.28	21.35
1968.....	7.52	21.62
1969.....	7.75	23.26
1970.....	8.08	24.24
1971.....	8.52	26.08
1972.....	9.10	29.09
1973.....	10.30	30.86

<sup>1</sup> Cash wage only. Does not include "employee benefits" which amounted to \$12.48 a day in 1973.

\* Hawaiian basis is the average New York raw sugar price computed over all the days in the year. The New York price is computed for days the New York market is operating. Local sugar land leases are based on the Hawaiian basis rather than the New York basis.

## WAGES, HOURS & WORKING CONDITIONS

Hawaii's 9,350 year-round sugar company employees are the highest paid agricultural workers in the world, on the combined basis of their average daily cash earnings and the value of their employee benefits.

Sugar company production employees work in 11 labor grades. Current (August, 1974) Grade 1 rate of pay is \$3.20 an hour. Grade 11 employees earn \$5.155 an hour. Work performed in excess of 40 hours is paid for at premium rates.

Hawaii's sugar industry provides year-round, long term employment for its workers. No migratory labor is employed. Sugar operations are conducted on a 12-month basis.

Production and maintenance employees at 16 of the State's 17 sugar companies are organized by the International Longshoremen's and Warehousemen's Union.

In 1973, the payroll for all Hawaii's sugar workers amounted to \$82,583,806.

### DAILY AVERAGE EARNINGS IN 1973

Wages .....	\$30.86
Employee Benefits .....	12.48
Total .....	\$43.34

### EMPLOYEE BENEFITS

Year-round employees receive up to four weeks vacation with pay, nine paid holidays a year; paid sick leave for up to 54 days plus a temporary disability supplement for extended illness, medical plan, a dental care plan for dependent children, retirement pensions, severance pay and many other benefits.

### RETIREMENT

Sugar workers in Hawaii receive excellent retirement benefits. As of February 1, 1974, retiring sugar production employees receive \$7.00 a month for each year of credited service up to 33-1/3 years and \$3.00 a month for each year of credited service after 33-1/3 years. In 1974, there were 2,035 workers with over 30 years of service with the sugar industry in Hawaii. There were 718 workers with over 40 years of service. A worker retiring with 40 years of credited service would receive a pension of about \$250 a month plus Social Security at age 65. The combined pension and Social Security benefits often gives the worker as much in retirement as he received in take home pay before retirement.

### APPROXIMATE EMPLOYMENT BY OCCUPATION AT SUGAR COMPANIES

Factory .....	1,215
Field .....	3,130
Motive Equipment .....	1,680
Construction & Surveying .....	185
Dispensary .....	40
Clerical .....	270
Trades .....	1,290
Miscellaneous .....	430
Supervisors .....	1,110
Total .....	9,350

## PRODUCTIVITY: HAWAII SUGAR FIELDWORKER

WEIGHTED AVERAGE EARNINGS \$ PER HOUR				MAN-HOURS PER TON SUGAR Raw Value	WAGE COSTS \$ PER TON SUGAR** Raw Value
Earnings Benefits Total					
1946	\$0.586	\$0.147	\$0.733	33.24	\$24.36
1950	1.089	.195	1.284	25.86	33.20
1951	1.127	.235	1.362	24.18	32.93
1952	1.204	.251	1.455	23.00	33.47
1953	1.303	.269	1.572	23.42	36.82
1954	1.372	.339	1.711	21.06	36.03
1955	1.448	.405	1.853	17.42	32.28
1956	1.469	.448	1.917	17.30	33.16
1957	1.538	.482	2.020	16.46	33.25
1958	1.597	.571	2.168	18.02	39.07
1959	1.753	.521	2.274	16.90	38.43
1960	1.794	.557	2.351	16.72	39.31
1961	1.919	.605	2.524	13.90	35.08
1962	2.003	.734	2.737	13.76	37.66
1963	2.100	.750	2.850	13.56	38.65
1964	2.308	.750	3.058	11.76	35.96
1965	2.436	.800	3.236	10.82	35.01
1966	2.617	.800	3.417	10.50	35.88
1967	2.784	.900	3.684	10.64	39.20
1968	2.836	1.050	3.886	9.98	38.78
1969	3.083	1.200	4.283	9.44	40.43
1970	3.248	1.250	4.498	9.50	42.73
1971	3.436	1.284	4.720	9.04	42.67
1972	3.722	1.404	5.126	9.22	47.26
1973	4.093	1.560	5.653	9.20	52.01

\*\*Including Earnings and Fringe Benefits.

Source: U.S.D.A.

## TAXES PAID

Sugar is one of the largest single taxpayers in Hawaii. In 1973, sugar companies paid a total of over \$43.6 million in Federal and State taxes. The largest single item in taxes was the more than \$29.6 million paid in Federal income taxes. State taxes paid amounted to more than \$8.5 million. These State taxes included:

Gross Income .....	\$3,781,000
General Excise & Use .....	1,839,000
Real Property .....	2,186,000
Unemployment	
Compensation .....	420,000
City & County Licenses .....	200,000
All Other Taxes .....	120,000

## SUGAR LANDS

The Hawaiian Islands make up the union's fourth smallest state. The islands are actually the summits of a chain of volcanic mountains, some of which are still active. Only certain lowlands near the coasts are tillable because of the rugged terrain and the character of the soils. The balance is forest, pasture and wasteland.

Hawaii's sugar companies are located along the coastlines of the four sugar islands and push upwards into the foothills and mountains.

The companies have over 250,000 acres devoted to growing sugar in Hawaii, with about 16,000 acres in mill sites, roads, irrigation systems, etc., or uncultivated land. This is equal to about 6 percent of total land area and about 11 percent of total private land.

More than half of the sugar lands are owned by the sugar companies. The balance is leased from government or private owners.

## ISLAND LAND AREAS WITH SUGAR

Island	Ex- treme Length Miles	Ex- treme Width Miles	Area		(1973) Total Cane Acreage**
			Square Miles*	Acres 000's	
Hawaii .....	93	76	4,038	2,573	101,895
Maui .....	48	26	729	466	45,698
Oahu .....	44	30	608	381	32,690
Kauai .....	33	25	553	353	46,297
Molokai ..	38	10	261	166	.....
Lanai .....	18	13	139	90	.....
Niihau .....	18	6	73	46	.....
Kahoolawe	11	6	45	29	.....
Minor					
Islands ..	....	....	4	2	.....
			6,450	4,106	226,580

\* Includes land and inland water.

\*\* Does not include mill sites, roads, etc.

## HAWAII LAND OWNERSHIP

Government	Acres
Federal .....	355,769
State .....	835,323
Counties .....	12,111
Total .....	1,203,203
Private .....	2,955,582
Total .....	4,158,785

Source: The State of Hawaii Data Book 1973.

## LAND TENURE\*

16 Sugar Companies & Independent Grower  
Farms/Adherent Planters

Land Used		Total
By Sugar Companies	Acreage	Acreage
Owned in Fee Simple .....	117,245	
Leased .....	122,735	
		239,980

Land Used By  
Independent Grower Farms/  
Adherent Planters

Leased from sugar companies	3,540
Sub-leased from	
sugar companies .....	2,415
Direct Ownership, or Leased	
from Other Sources .....	7,373
	13,328
Total .....	253,308

## INDEPENDENT GROWERS

Number Grower Farms\*\* .. 520

\* Includes "attributable land": roads, reservoirs, mill sites and irrigation ditch systems (approximately 12,500 acres).

\*\* Does not include Co-producers or Adherent Planters.



## CANE SUGAR: PRODUCTION IN HAWAII

Production Year <sup>1</sup> (Beginning Oct. 1st, Ending Sept. 30th)	Tons sugar per acre	Tons cane per ton sugar	Total cane land area	CANE USED FOR SUGAR			SUGAR PRODUCED		Raw value 96° sugar made per short tons of cane
				Acreage har- vested <sup>2</sup>	Average yield per acre	Pro- duction	Converted to 96° raw value <sup>3</sup>	Equivalent refined <sup>4</sup>	
			Acres	Acres	Short Tons	Short Tons	Short Tons	Short Tons	Pounds
1908-1909.....	5.14	7.42	201,641	106,127	38.2	4,050,000	545,738	510,048	270
1909-1910.....	4.81	7.78	209,469	110,247	37.4	4,122,000	529,940	495,282	257
1910-1911.....	5.16	7.94	214,312	112,796	41.0	4,623,000	582,196	544,120	252
1911-1912.....	5.34	7.75	216,345	113,866	41.4	4,711,000	607,863	568,109	258
1912-1913.....	4.90	7.99	215,741	113,548	39.1	4,445,000	556,654	520,249	250
1913-1914.....	5.54	8.01	217,470	112,700	44.4	5,000,000	624,165	583,345	250
1914-1915.....	5.75	7.96	239,800	113,164	45.8	5,184,393	650,970	608,397	251
1915-1916.....	5.17	8.14	246,332	115,419	42.1	4,859,424	596,703	557,679	246
1916-1917.....	5.57	7.98	247,476	117,468	44.4	5,220,000	654,388	611,591	251
1917-1918.....	4.86	8.34	246,813	119,785	40.5	4,855,804	582,192	544,117	240
1918-1919.....	5.07	7.81	239,844	119,679	39.6	4,744,070	607,174	567,465	256
1919-1920.....	4.91	7.98	247,838	114,105	39.2	4,473,498	560,379	523,730	251
1920-1921.....	4.83	8.53	236,510	113,056	41.2	4,657,222	546,273	510,547	235
1921-1922.....	4.98	8.23	228,519	124,124	41.0	5,088,062	618,457	578,010	243
1922-1923.....	4.85	8.23	235,134	114,182	39.9	4,559,819	554,199	517,954	243
1923-1924.....	6.42	7.91	231,862	111,581	50.7	5,661,000	715,918	669,097	253
1924-1925.....	6.47	8.06	240,597	120,632	52.2	6,297,000	781,000	730,000	248
1925-1926.....	6.58	8.07	237,774	122,309	53.1	6,495,686	804,644	752,020	248
1926-1927.....	6.68	8.41	234,809	124,542	56.1	6,992,082	831,648	777,258	238
1927-1928.....	7.00	8.37	240,769	131,534	58.6	7,707,330	920,887	860,661	239
1928-1929.....	7.16	8.05	239,858	129,131	57.7	7,447,494	925,140	864,636	248
1929-1930.....	7.02	8.36	242,761	133,840	58.7	7,853,439	939,287	877,858	239
1930-1931.....	7.43	8.33	251,533	137,037	61.9	8,485,183	1,018,047	951,467	240
1931-1932.....	7.57	8.38	251,876	139,744	63.4	8,865,323	1,057,303	988,155	239
1932-1933.....	7.34	8.05	254,563	144,959	59.1	8,566,781	1,063,605	994,045	248
1933(Oct.1-Dec.31)							127,317	118,990	
1934*.....	7.14	8.33	252,237	134,318	59.5	7,992,260	959,337	896,596	240
1935.....	7.82	8.67	246,491	126,116	67.8	8,555,424	986,849	922,309	231
1936.....	7.97	8.80	245,891	130,828	70.1	9,170,279	1,042,316	974,149	227
1937.....	7.46	9.32	240,833	126,671	69.5	8,802,716	944,382	882,619	215
1938.....	6.92	9.39	238,302	135,978	65.0	8,835,370	941,293	879,732	213
1939.....	7.18	8.66	235,227	138,440	62.2	8,609,543	994,173	929,154	231
1940.....	7.16	8.76	235,110	136,417	62.7	8,557,216	976,677	912,802	228
1941.....	7.24	9.04	238,111	130,768	65.5	8,559,797	947,190	885,244	221
1942.....	7.58	9.10	225,199	114,745	69.0	7,918,342	870,099	813,195	220
1943.....	7.79	9.24	220,928	113,754	71.9	8,185,400	885,640	827,719	216
1944.....	7.99	8.95	216,072	109,522	71.5	7,832,185	874,947	817,725	223
1945.....	7.96	8.98	211,331	103,173	71.4	7,371,158	821,216	767,509	223
1946.....	8.06	8.83	208,376	84,379	71.1	6,002,127	680,073	635,596	227
1947.....	7.72	9.11	211,624	113,020	70.3	7,942,216	872,187	815,146	220
1948.....	8.35	9.03	206,550	100,042	75.4	7,542,613	835,107	780,491	221
1949.....	8.76	8.44	213,354	108,794	73.9	8,045,941	955,890 <sup>5</sup>	893,375	238
1950.....	8.78	8.51	220,383	109,405	74.7	8,174,821	960,961 <sup>6</sup>	898,114	235
1951.....	9.09	8.51	221,212	109,494	77.4	8,477,201	995,759	930,636	235
1952.....	9.44	8.52	221,990	108,089	80.4	8,693,920	1,020,450	953,712	235
1953.....	10.15	8.19	221,542	108,337	83.1	9,003,967	1,099,316	1,027,421	244
1954.....	10.02	8.75	220,138	107,480	87.75	9,431,781	1,077,347	1,006,889	228
1955.....	10.74	8.66	218,819	106,180	92.94	9,867,978	1,140,112	1,065,525	231
1956.....	10.28	9.01	220,606	106,956	92.65	9,909,990	1,099,543	1,027,633	222
1957.....	10.16	8.71	221,336	106,742	88.51	9,447,647	1,084,646	1,013,710	230
1958.....	9.09	9.87	221,683	84,136	89.77	7,552,750	764,953	714,925	203
1959.....	8.83	9.66	222,588	110,371	85.31	9,416,225	974,632	910,891	207
1960.....	9.03	9.20	224,617	103,584	83.15	8,613,317	935,744	874,546	217
1961.....	10.09	8.78	227,027	108,320	88.58	9,595,342	1,092,481	1,021,033	228
1962.....	10.31	8.76	228,926	108,600	90.36	9,812,580	1,120,011	1,046,762	228
1963.....	10.25	9.12	231,321	107,436	93.39	10,033,969	1,100,768	1,028,777	219
1964.....	10.64	8.90	233,145	110,759	94.76	10,495,175	1,178,770	1,101,678	225
1965.....	11.11	8.82	235,576	109,600	97.97	10,737,507	1,217,667	1,138,033	227
1966.....	11.12	8.89	237,499	111,005	98.82	10,969,925	1,234,121	1,153,409	225
1967.....	10.65	9.27	239,813	111,837	98.74	11,045,949	1,191,042	1,113,148	216
1968.....	10.85	9.15	242,476	113,525	99.36	11,279,920	1,232,182	1,151,597	218
1969.....	10.44	9.17	242,216	113,232	95.73	10,839,272	1,182,414	1,105,060	218
1970.....	10.21	9.00	238,997	113,816	91.88	10,457,377	1,162,071	1,086,000	222
1971.....	10.62	8.69	232,278	115,810	92.26	10,685,019	1,229,976	1,149,510	230
1972.....	10.32	8.87	229,611	108,456	91.55	9,929,068	1,118,883	1,045,708	225
1973.....	10.43	8.55	226,580	108,189	89.15	9,645,452	1,128,529	1,054,723	234

1. From 1908-1933 acreage harvested represents summation of plantation crop years and does not necessarily correspond to the period Oct. 1 to Sept. 30.

2. The average growth of a crop is from 22 to 24 months. Only a portion of the total acreage in cane is harvested each year.

3. Converted in accordance with Sugar Regulations, Series 1, No. 1, U.S. Department of Agriculture, Agricultural Adjustment Administration, issued February 18, 1935, or Section 101(h) of

the Sugar Act of 1948 or corresponding provisions of its predecessors, as the case may be.

4. 1 ton of sugar, 96° test is assumed to be equivalent to 0.9346 tons of refined.

5. Includes 2,369 tons raw sugar produced from volunteer cane for which no acreage shown.

6. Includes 2,690 tons raw value sugar produced from volunteer cane for which no acreage shown.

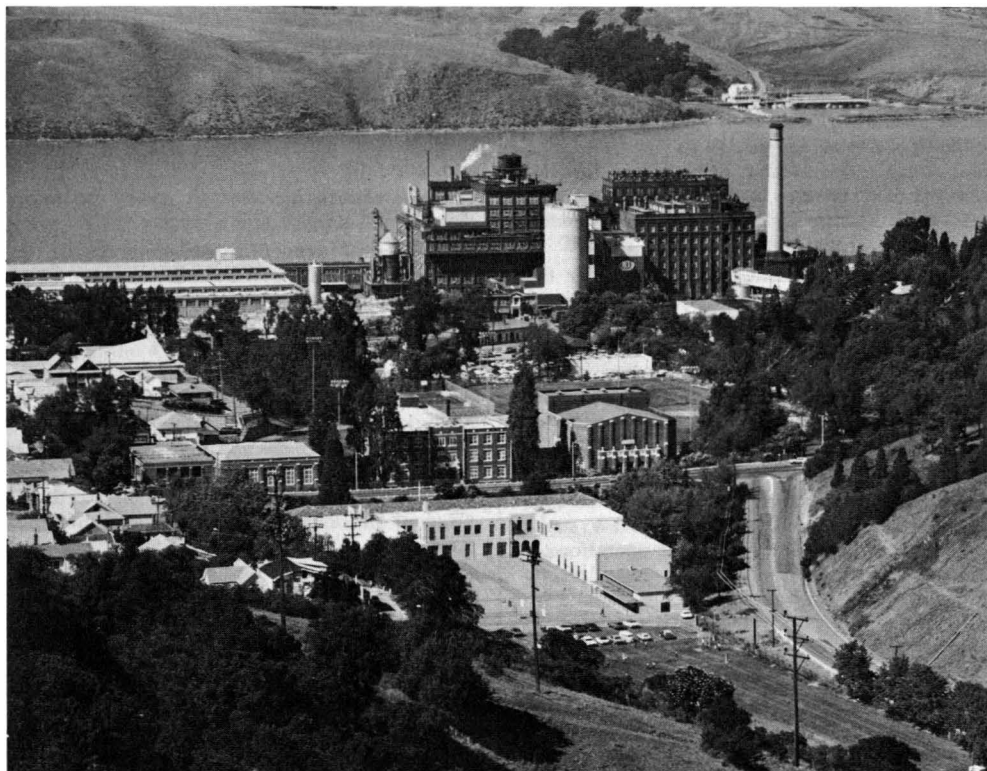
\*Begin Calendar Year Basis.

## COMPARISON:

**SUGARCANE ACREAGE,  
ACREAGE HARVESTED,  
PRODUCTION, AVERAGE  
NUMBER OF ADULT  
HOURLY RATED  
EMPLOYEES, AND  
TOTAL MAN-DAYS  
ALL HOURLY RATED  
EMPLOYEES ON  
HAWAIIAN SUGAR  
PLANTATIONS**







*C and H refinery at Crockett on San Francisco Bay is one of world's largest with daily melt capacity of 4,000 tons. C and H markets all of Hawaii's raw sugar production.*

## HAWAIIAN SUGAR PLANTERS' ASSOCIATION

The Hawaiian Sugar Planters' Association was established in 1895 replacing the Planters' Labor and Supply Company which had been in existence since 1882.

The Association is a nonprofit, agricultural organization of sugar companies and individuals united for the purposes of maintenance, advancement and protection of the sugar industry in Hawaii, the support of a scientific experiment station and the development of agriculture in general.

The HSPA is governed by a board of directors drawn from members-companies of the Association. The president, who serves for one year, is elected from among the board members.

The following principal committees represent the major activities of the Association: Accounting, Industrial Relations, Insurance, Land, Legislative, Growers', Tax, Experiment Station Advisory, and Environmental Standards.

The HSPA acts as a clearing house for all scientific activities of the industry, making possible the utilization of the best technical knowledge available.

The Experiment Station of the Hawaiian Sugar Planters' Association also was established in 1895. The cost of operating this scientific research organization, over \$2,000,000 a year, is borne in full by the HSPA, with each sugar company paying a pro-rata share of the total.

The Station has developed many new varieties of sugar cane particularly suitable for the Hawaiian soil and climate, has kept insect pests and plant diseases at a minimum, and has contributed generally to the high yield of Hawaiian cane areas. Its research and services have benefited all agriculture in Hawaii. The Station maintains substations on all of the four sugar producing islands.

The HSPA maintains an office in Washington, D.C., which represents the industry in all of its government relationships, in contacts with other elements of the domestic industry, and acts as general representative of the industry on the mainland.

## REFINING HAWAIIAN RAW SUGAR

All of Hawaii's raw sugar and molasses production is marketed by the California and Hawaiian Sugar Company, the only cane sugar

refiner on the Pacific Coast.

C and H, as the company and its products are generally known, is an agricultural marketing association. Its stock is owned by its 16-member sugar producing companies in Hawaii, substantially in the same proportion as the tonnage of raw sugar each markets through the association. C and H also serves as refining and marketing agency for some 520 independent, non-member sugarcane farmers in Hawaii.

C and H was established in 1906—under the Capper-Volstead Act which authorizes cooperative marketing associations by producers of agricultural products—in a successful effort by Hawaiian sugar producers to overcome discriminatory pricing practiced against Hawaiian raw sugar by a "sugar trust" which existed at that time among mainland sugar refiners.

Headquartered in San Francisco, C and H has capacity to refine approximately 1 million tons of raw sugar annually. Hawaiian raw sugar not required for C and H refining operations is sold by the company to Gulf and Atlantic Coast refiners. Hawaiian molasses is sold to distributors by C and H, primarily for use in animal feed.

Two refineries are operated by C and H, one the world's largest at Crockett, California near San Francisco, the other a smaller plant at Aiea, near Honolulu. The Crockett refinery has capacity to melt about 960,000 tons of raw sugar annually. The Aiea refinery can process about 40,000 tons of raw sugar a year, primarily to supply the refined sugar needs of Hawaii.

The mainland refinery is strategically located for receipt of raw sugar and other supplies as well as for distribution of refined sugars.

Crockett is a protected deep water port on Carquinez Strait, where it joins San Francisco Bay. Adjacent to a transcontinental highway, the refinery also is near the West Coast railheads of three major railways.

At the Crockett refinery bulk raw sugar cargoes are discharged from ships into dockside storage bins. These receiving and storage facilities have capacity for more than 100,000 tons of raw sugar.

Although portions of the refinery structure pre-date 1906, it houses some of the most innovative, sophisticated equipment and facilities in the industry. Fully equipped laboratories are staffed for basic research, quality control, new products research as well as microbiological and packaging materials investigation.

The refinery operates the year round, producing refined sugars in more than 100 types, grades and package sizes, including an unsurpassed variety of packaged sugars for the grocery trade, as well as sugars for industrial use in packaged, bulk granulated and liquid form. High speed refinery packaging equipment has capacity to turn out more than a million con-

sumer size packages of refined sugar a day.

More than one and one-half miles of conveyors take packaged sugar from packing stations to automatic palletizers in the warehouse which mechanically form pallet loads and move sugar-loaded pallets into warehouse storage and shipping areas.

This warehouse has storage space for more than 50,000 tons of refined sugar.

Shipments of refined sugar move from the warehouse to customers by rail, truck and river boat. Within the warehouse is an enclosed rail siding upon which up to 14 standard freight cars can be spotted alongside loading docks. A covered truck-loading station can accommodate seven truck-trailer units for simultaneous loading.

Terminals for storage and distribution of bulk and liquid industrial sugars are operated by C and H at Seattle, Washington; Portland, Oregon; Crockett and Los Angeles, California; Aiea, Hawaii; and Phoenix, Arizona.

C and H sugars are sold in the two-thirds of the U.S. mainland, generally west of the Mississippi River Valley, as well as in Hawaii and Alaska. Sugars packaged for grocery sales under the "C and H" trademark are distributed more widely in this region than any other brand.

Chief competition for sales encountered by C and H is from beet sugar produced in 50 sugar beet factories. The majority of these processing plants are located in the 11 Western states, which due to freight costs comprise the primary, preferred market for C and H.

Sales of C and H sugars are handled through company sales offices in San Francisco, Oakland and Los Angeles, California and through sugar brokers with offices in key locations throughout the balance of the territory served.

C and H employs approximately 1,500 persons in mainland operations and has about 70 employees at the Aiea refinery. Total annual payroll is in excess of \$21 million.

James H. Marshall is president and chief executive officer of C and H. Company headquarters offices are at One California Street, San Francisco, California, 94106.



## IMPORTANT HISTORICAL DATES

- 1802 Reportedly, a Chinese made crude sugar in primitive mill on Lanai Island, abandoned efforts.
- 1825 First plantation attempted in Manoa Valley, Oahu.
- 1835 Ladd & Company founded first successful plantation, Koloa on Kauai.
- 1837 First Koloa sugar, 2.1 tons.
- 1838 Twenty sugar mills in operation, 18 animal powered, 2 water.
- 1852 First sugar centrifugal introduced, Makawao Plantation; arrival of first Chinese laborers.
- 1853 First steam engine, Koloa.
- 1857 Irrigation introduced, Lihue.
- 1859 First steam mill, Lihue.
- 1860 Judd and Wilder established first mill on Oahu, Kualoa Plantation.
- 1863 Pepeekeo introduced vacuum pan.
- 1868 First Japanese laborers arrived.
- 1876 Reciprocal trade treaty, Kingdom of Hawaii and United States, admitted sugar duty free. Alexander & Baldwin built Hamakua Ditch at cost of \$80,000, first large-scale irrigation on islands, 17 miles long and producing 40,000,000 gallons a day.
- 1878 Portuguese immigrants arrived.
- 1879 Ewa drilled first artesian well; Onomea pioneered with commercial fertilizer.
- 1881 German immigrants arrived at Lihue; Hamakua bought first steam plow.
- 1882 HSPA organized as Planters' Labor & Supply Co.
- 1885 First chemist engaged; Makee inaugurated night grinding.
- 1886 First 100,000-ton crop.
- 1895 Experiment Station founded; Ewa installed 9-roller mill.
- 1897 First 250,000-ton crop.
- 1898 Hawaii annexed to United States.
- 1904 Leaf hopper parasites introduced from Australia.
- 1905 H-109 variety of cane germinated from seedling.
- 1906 California & Hawaiian Sugar Refining Corp. founded; Filipino immigration.
- 1907 Oahu Sugar Co. installed first 12-roller mill.
- 1910 Kilauea introduced gasoline tractor. Cane borer parasite introduced from New Guinea.
- 1916 *Anomala* beetle parasite introduced from the Philippines.
- 1920 Leaf hopper completely controlled by egg-sucking parasite introduced from Australia and Fiji.
- 1922 First commercial-scale mechanical loading of cane by self-propelled vehicle.
- 1923 First Dorr Clarifiers (2 factories).
- 1924 First of series of ten consecutive record crops.
- 1926 First Oliver Filter, Oahu Sugar Company.
- 1928 Establishment of sugarcane quarantine station on Island of Molokai.
- 1932 First million-ton crop; *bufo marinus*, insectivorous frog, brought to Territory to control pests.
- 1934 First high-speed sugar centrifugals—Waialua.
- 1935 Long-line irrigation widely adopted by plantations.
- 1936 First major use of trucks for cane hauling. HSPA insect and plant disease quarantine started on Midway Island.
- 1937 Expedition to New Guinea to collect wild sugarcanes for breeding. Mechanical harvesting begun at Ewa Plantation. Development of "prebaiting" technique of rat control. Research on food yeast from molasses. Mechanical harvesting by "grabs" started—Ewa Plantation.
- 1941 32-8560 displaces H-109 as leading variety. First precision refractometer for factory control.
- 1942 New armyworm parasite brought from Texas. Plantation operations subordinated to defense requirements. War brings acute shortage of labor and equipment, resulting in forced use of all known types of mechanization. First bulk sugar plant began operating at Kahului, Maui.
- 1945 Development of activated diesel oil emulsion for weed control. Organization of the Agricultural Engineering Research Department to consolidate and expand research development. HSPA furnished \$100,000 to finance University of Hawaii Agricultural Engineering Institute buildings and equipment. Ion exchange research started.
- 1946 Production reduced severely by two-and-a-half month strike.
- 1947 Plantation railroads rapidly being replaced with trucks. Field testing started on several types of cane cutters. Ion exchange pilot plant in operation.
- 1948 V-cutter and side-mounted cutter for unirrigated cane and 2-line cutter for irrigated cane developed. Chemical weed control with pre-emergence and contact herbicides used on all plantations.

- 1949 Second bulk sugar plant began operating at Hilo, Hawaii.
- 1950 First commercial models of HSPA-developed harvesting machines for both irrigated and unirrigated plantations put into operation at three plantations; third bulk sugar plant began operating at Nawiliwili, Kauai; aluminum flumes used on a field scale for irrigation and cane transport.
- 1951 By-products pilot plant installed at Oahu Sugar Co., Ltd.; direct-mounted cane cutter and infield transport machine for unirrigated plantations developed; 37-1933 replaces 32-8560 as leading cane variety; radioactive materials used in irrigation and fertilization experiments; 40-hour week for half the year established on plantations; first bulk raw sugar shipments made to east coast. Aerial fertilization began.
- 1952 Cane buggy adopted by Hilo-coast plantations.
- 1953 First commercial application of liquid nitrogen fertilizer (aqua ammonia) made at Ewa Plantation Co.; Kauai and Maui plantations hit hardest by one of the Territory's worst droughts.
- 1954 First industry-wide pension plan established; HSPA corrosion inhibitor developed; 124-acre arboretum deeded to the University of Hawaii; HSPA meteorologists participate in Project Shower, "warm" rainfall study.
- 1955 Bulk sugar storage-loading plant completed at Honolulu.
- 1956 California and Hawaiian Sugar Company celebrated its fiftieth anniversary. Total half-century production came to nearly 25 million tons of raw sugar refined. Long-term agreement reached providing that Imperial will buy Hawaiian raw sugar to fill a substantial part of its needs.
- 1957 Regular shipments of Hawaiian raw sugar to Imperial Sugar Company started.
- 1958 Four-month-long, industry-wide strike drastically reduced production.
- 1959 Tenth Congress of International Society of Sugar Cane Technologists held in Honolulu.
- 1960 Variety 44-3098 replaced 37-1933 as leading cane variety.
- 1961 Production, reduced for three years by the 1958 strike, returned to normal levels.
- 1962 Hakalau Sugar Company was merged into Pepeekeo Sugar Company, reducing the number of sugar companies to 25. Variety 50-7209 replaced 44-3098 as leading cane variety.
- 1964 First sugarcane diffuser began commercial operation at Pioneer Mill.
- 1966 Record raw sugar crop of 1,234,121 tons was produced.
- 1967 First commercial model of HSPA developed sugarcane drycleaner tested at Laupahoehoe Sugar Co.
- 1969 Five-week industry-wide strike over terms of new three-year contracts.
- 1970 First commercial sugarcane drycleaner installed at Paaupau Sugar Co. on Hawaii Island.
- 1971 Months-long West Coast Longshoreman's strike stops shipments to C&H, disrupts C&H marketing program, and creates raw sugar and molasses storage problems in Hawaii. Smut disease discovered on Oahu.
- 1972 Sub-surface and drip irrigation research intensified. Smut infection found on more than 5000 acres on Oahu. Molokai quarantine station closed. USDA agrees to undertake 2-year quarantine for Hawaii canes at Beltsville, Maryland.
- 1973 Smut testing of 8,000 varieties completed. Top two varieties, 50-7209 and 59-3775 remain uninfected. First temporary registration for chemical ripener for sugarcane obtained. Nearly 3,000 acres of furrow-irrigated lands converted to flat culture by installing drip irrigation. Harvesting methods field trials stepped up. Success obtained with HSPA rock-removal cane drycleaner tested at Pioneer Mill Company, Ltd. First voyage of new ship, Sugar Islander, leased by California and Hawaiian Sugar Co. to take Hawaii sugar to the Mainland. Grove Farm announced it was going out of sugarcane operations. Grove Farm sugarcane lands and leases were taken over by McBryde Sugar Co. and The Lihue Plantation Co.
- 1974 Variety 59-3775, developed by HSPA geneticists, became the most widely planted sugarcane within the State. Industry-wide strike closed all but Kohala Sugar Co. from March 9 through April 23. Plans were prepared for new HSPA facility in Aiea on same site as the C and H refinery. City of Honolulu took 3.4 mauka acres of Makiki HSPA site for a park.

## Part II

### U.S. SUGAR INDUSTRY

America's sugar needs are met by a variety of sources, both domestic and foreign. Including Hawaii, 25 states produce sugar. Other states, which do not produce sugar themselves, have sugar refineries.

Florida, Louisiana and Texas are at present the only U.S. mainland states which grow and process sugarcane. Texas—the first new sugarcane area in the U.S. in nearly 50 years—began production in 1973. The Commonwealth of Puerto Rico also grows and processes sugarcane. (For 1973 production, see tables, pages 9, 20, 21 and 22.)

Foreign sugar, all produced from sugarcane, is supplied by 32 countries. Virtually all of this sugar enters the U.S. through ports on the Gulf and East Coasts.

In 1973, American consumers and businesses consumed 11,482,498 tons of sugar. Over 60 percent was domestically produced with the balance supplied by foreign producers.

### BET SUGAR INDUSTRY

About one-third of the sugar consumed in the U.S. is produced from sugarbeets. Grown mostly by small farmers in 19 states, sugarbeets are sold under contract to 13 sugarbeet processing companies operating 54 factories in 16 states.

The first successful sugarbeet processing plant commenced operations near San Francisco, Calif. in 1870.

### CANE SUGAR REFINING INDUSTRY

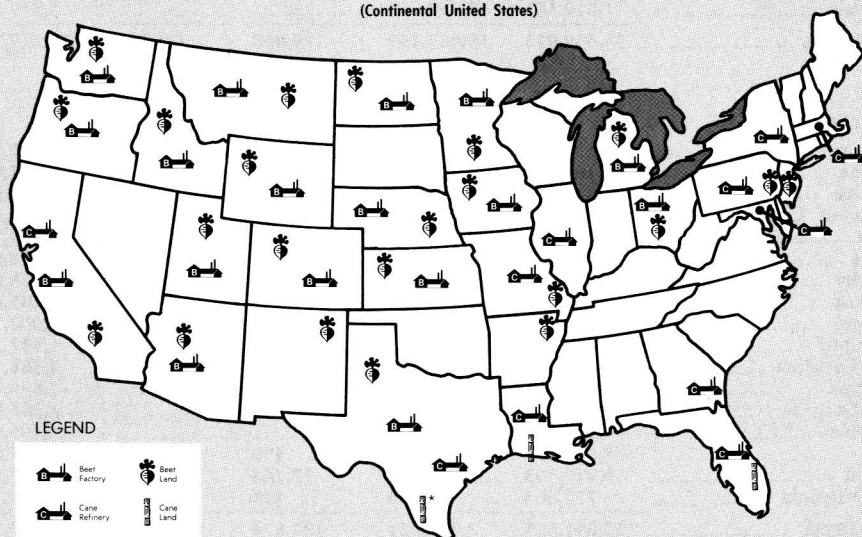
Approximately two-thirds of the sugar consumed in the United States is cane sugar refined in the continental United States. The nation's cane sugar refining industry consists of 23 refineries located principally on the East and Gulf Coasts with one large refinery near San Francisco. Smaller plants and distribution stations are operated principally in the South and Middle West.

Cane sugar refining is one of America's oldest industries, dating back to pre-Revolutionary times. Today, the industry represents a capital investment of almost \$500,000,000 in buildings, machinery, docks, land and other physical properties. It provides direct employment to more than 17,500 persons and has an annual payroll in excess of \$100,000,000.

Raw cane sugar supplies for the refineries are now obtained from practically all four corners of the globe with the domestic producing areas—Hawaii, Puerto Rico, and on the mainland, Louisiana, Florida, and Texas—contributing up to 40 per cent. The annual melting (or processing) capacity of the industry is approximately 8,250,000 short tons of raw sugar. According to official statistics, the 1973 volume of melt was 7,909,480 tons.

*Cont. on Page 19*

MAJOR SUGARCANE, SUGARBEET PRODUCING AREAS; & STATES REFINING SUGARCANE OR BEETS  
(Continental United States)



\*Starting 1973

# **DELIVERIES OF SUGAR IN CONTINENTAL UNITED STATES BY PRIMARY DISTRIBUTORS, CALENDAR YEAR 1973<sup>1</sup>**

State and Region	Cane Sugar Refiners	Beet Sugar Processors	Importers of Direct-Consumption Sugar	Mainland Cane Sugar Mills	Total
Hundredweights <sup>1</sup>					
NEW ENGLAND					
Connecticut .....	1,189,768	5,604	400		1,195,772
Maine .....	517,867				517,867
Massachusetts .....	5,230,173		145,509		5,375,682
New Hampshire .....	837,710				837,710
Rhode Island .....	361,037		5,515		366,552
Vermont .....	251,703				251,703
SUB-TOTAL .....	8,388,258	5,604	151,424		8,545,286
MID-ATLANTIC					
New Jersey .....	9,031,659	36,404	357,644	6,804	9,432,511
New York .....	14,944,411	596,672	342,115	93,054	15,976,252
Pennsylvania .....	13,749,990	470,050	281,894	59,597	14,561,531
SUB-TOTAL .....	37,726,060	1,103,126	981,653	159,455	39,970,294
NORTH CENTRAL					
Illinois .....	8,173,904	15,459,973	16,200	265,284	23,915,361
Indiana .....	4,024,048	1,893,671	1,650	8,000	5,927,369
Iowa .....	932,103	1,788,064			2,720,167
Kansas .....	571,833	1,246,572			1,818,405
Michigan .....	4,042,780	5,048,622			9,091,402
Minnesota .....	509,386	2,655,195			3,164,581
Missouri .....	3,671,798	2,098,215			5,770,013
Nebraska .....	363,155	1,589,330			1,952,485
North Dakota .....	17,038	335,453			352,491
Ohio .....	9,477,079	3,297,387	1,200		12,775,666
South Dakota .....	37,424	333,329			370,753
Wisconsin .....	1,619,363	3,739,658			5,359,021
SUB-TOTAL .....	33,439,911	39,485,469	19,050	273,284	73,217,714
SOUTHERN					
Alabama .....	2,824,952			409	2,825,361
Arkansas .....	1,184,546	197,285			1,381,831
Delaware .....	1,840,277	1,000	400		1,841,677
District of Columbia .....	381,509	2	550		382,061
Florida .....	5,199,257			1,064,929	6,264,186
Georgia .....	7,416,444	336		20,040	7,436,820
Kentucky .....	2,555,056	3,000			2,558,056
Louisiana .....	4,157,648		2,214	25,754	4,185,616
Maryland .....	4,878,877	1	117,610	5,700	5,002,188
Mississippi .....	1,516,654			15,536	1,532,190
North Carolina .....	4,373,618	1,161	7,394	5,969	4,388,142
Oklahoma .....	1,341,905	492,601			1,834,506
South Carolina .....	2,280,852	3,914	1,092		2,285,858
Tennessee .....	4,495,310	1,022			4,496,332
Texas .....	8,600,663	2,142,184	450	19,563	10,762,860
Virginia .....	3,216,353		57,764	43,404	3,317,521
West Virginia .....	777,404	27,518	400	3,000	808,322
SUB-TOTAL .....	57,041,325	2,870,024	187,874	1,204,304	61,303,527

*Continued Next Page*



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### Deliveries, Sugar, Continental U.S., by Primary Distributors

<u>State and Region</u>	<u>Cane Sugar Refiners</u>	<u>Beet Sugar Processors</u>	<u>Importers of Direct-Consumption Sugar</u>	<u>Mainland Cane Sugar Mills</u>	<u>Total</u>
Hundredweights <sup>1</sup>					
<u>WESTERN</u>					
Alaska .....	30,935	11,375	.....	.....	42,310
Arizona .....	422,660	638,549	.....	.....	1,061,209
California .....	7,567,305	14,254,634	26,150	.....	21,848,089
Colorado .....	216,296	1,574,728	.....	.....	1,791,024
Idaho .....	46,572	333,439	.....	.....	380,011
Montana .....	74,945	293,338	.....	.....	368,283
Nevada .....	64,550	62,902	.....	.....	127,452
New Mexico .....	82,870	250,440	.....	.....	333,310
Oregon .....	726,064	1,466,991	5,200	.....	2,198,255
Utah .....	151,624	892,079	.....	.....	1,043,703
Washington .....	758,902	2,262,746	28,400	.....	3,050,048
Wyoming .....	32,340	134,924	.....	.....	167,264
SUB-TOTAL .....	10,175,063	22,176,145	59,750	.....	32,410,958
GRAND TOTAL .....	146,770,617	65,640,368	1,399,751	1,637,043	215,447,779

<sup>1</sup> Reported as produced or imported and delivered except liquid sugar which is on a sugar solids content basis.

### SUGAR DELIVERIES, BY TYPE OF PRODUCT OR BUSINESS OF BUYER AND BY TYPE OF SUGAR, CALENDAR YEAR 1973<sup>1</sup>

Product or Business of Buyer	Beet (Total)	Cane (Total)	Imported	Total All Sugar	Liquid Sugar	
			D.C. (Total)		Included in Totals	Beet
Hundredweights <sup>a</sup>						
<b>INDUSTRIAL</b>						
Bakery, cereal and allied products .....	10,556,617	18,341,514	176,267	29,074,398	233,189	2,238,032
Confectionery and related products .....	6,589,435	13,998,314	116,327	20,704,076	199,436	2,948,123
Ice cream and dairy products .....	4,671,146	7,200,725	28,990	11,900,861	1,917,887	4,906,690
Beverages .....	11,656,618	37,638,714	91,192	49,386,524	6,027,273	23,366,329
Canned, bottled, frozen foods, jams, jellies and preserves .....	9,551,442	10,882,715	61,381	20,495,538	2,868,284	5,871,550
Multiple and all other food uses .....	3,683,173	6,289,145	67,746	10,040,064	261,898	1,586,035
Non-food products .....	517,006	1,688,070	15,636	2,220,712	27,343	686,397
SUB-TOTAL .....	47,225,437	96,039,197	557,539	143,822,173	11,535,310	41,603,156
<b>NON-INDUSTRIAL</b>						
Hotels, restaurants, institutions .....	181,980	1,696,260	600	1,878,840	17,305	99,403
Wholesale grocers, jobbers, sugar dealers ..	12,482,878	28,478,960	307,026	41,268,864	183,429	353,997
Retail grocers, chain stores, sugar markets ..	5,019,233	20,820,359	485,712	26,325,304	146,067	74,317
All other deliveries, including deliveries to Government agencies ..	730,842	1,343,250	50,475	2,124,567	45,218	71,129
SUB-TOTAL .....	18,414,933	52,338,829	843,813	71,597,575	392,019	598,846
TOTAL DELIVERIES ..	65,640,370	148,378,026	1,401,352	215,419,748	11,927,329	42,202,002
Deliveries in consumer-size packages (less than 50 lbs.) .....	9,774,844	40,454,787	373,180	50,602,811		
Deliveries in bulk (unpackaged) .....	31,071,037	37,255,309	11,337	68,337,683		

<sup>1</sup> Represents approximately 100 percent of deliveries by primary distributors in continental United States.

<sup>2</sup> Reported as produced or imported and delivered except liquid sugar which is on a sugar solids content basis.

**SUGARBEETS: ACREAGE, PRODUCTION, SEASON AVERAGE PRICE  
PER TON RECEIVED BY FARMERS AND VALUE; PRODUCTION OF  
BEET SUGAR AND MOLASSES PULP, UNITED STATES**

Year	Acreage Planted	Acreage Harvested	Average Yield Per Acre	Production	Price <sup>2</sup>	Farm value <sup>3</sup>	Sugar produced (refined basis)	Molasses pulp
	1,000 acres	1,000 acres	Short tons	1,000 short tons	Dollars Per Ton	1,000 Dollars	1,000 short tons	1,000 short tons
1915.....	664	611	10.7	6,511	5.67	36,950	874	.....
1920.....	978	872	9.8	8,538	11.63	99,324	1,089	.....
1925.....	781	648	11.4	7,381	6.39	47,137	913	.....
1930.....	821	776	11.9	9,199	7.14	65,698	1,208	150
1935.....	809	763	10.4	7,908	5.76	45,565	1,185	125
1936.....	855	776	11.6	9,028	6.05	54,636	1,304	157
1937.....	813	753	11.6	8,759	5.26	46,101	1,283	166
1938.....	985	925	12.4	11,497	4.65	53,478	1,674	219
1939.....	993	918	11.7	10,781	4.76	51,342	1,641	175
1940.....	971	912	13.4	12,194	5.11	62,287	1,758	182
1941.....	796	755	13.7	10,342	6.43	66,522	1,488	176
1942.....	1,048	954	12.2	11,685	6.84	79,905	1,617	149
1943.....	619	550	11.9	6,547	8.81	57,674	935	92
1944.....	633	555	12.1	6,718	10.60	71,156	979	72
1945.....	775	713	12.1	8,616	10.20	87,539	1,191	121
1946.....	905	802	13.2	10,582	11.10	117,840	1,422	153
1947.....	968	879	14.2	12,503	11.80	148,080	1,719	203
1948.....	800	694	13.6	9,424	10.60	99,639	1,280	199
1949.....	768	687	14.8	10,196	10.80	110,369	1,461	204
1950.....	1,014	925	14.6	13,535	11.20	151,293	1,878	293
1951.....	758	691	15.2	10,482	11.70	122,483	1,448	231
1952.....	719	665	15.3	10,169	12.00	121,970	1,407	253
1953.....	794	745	16.2	12,084	11.60	140,364	1,697	324
1954.....	964	876	16.1	14,082	10.80	152,151	1,909	355
1955.....	798	740	16.5	12,228	11.20	136,477	1,625	354
1956.....	831	785	16.6	12,993	11.90	155,087	1,837	428
1957.....	918	880	17.7	15,530	11.20	174,261	2,050	480
1958.....	935	891	17.0	15,150	11.70	177,807	2,056	484
1959.....	955	905	18.8	17,015	11.20	191,186	2,187	591
1960.....	977	957	17.2	16,421	11.60	190,109	2,291	613
1961.....	1,129	1,077	16.4	17,704	11.20	197,547	2,247	712
1962.....	1,182	1,103	16.5	18,254	12.80	233,243	2,417	676
1963.....	1,285	1,235	18.9	23,328	12.20	285,011	2,893	1,004
1964.....	1,460	1,395	16.8	23,389	11.80	275,660	3,073	1,114
1965.....	1,314	1,249	16.8	20,915	11.95	249,836	2,705	989
1966.....	1,240	1,161	17.5	20,342	12.80	260,355	2,643	933
1967.....	1,197	1,122	17.1	19,197	13.55	260,114	2,464	923
1968.....	1,476	1,410	18.0	25,363	13.81	350,207	3,255	1,292
1969.....	1,647	1,541	18.0	27,736	12.72	352,863	3,112	1,359
1970.....	1,483	1,419	18.6	26,427	14.84	390,813	3,179	1,331
1971.....	1,406	1,342	20.2	27,096	15.40	416,279	3,320	1,383
1972.....	1,420	1,329	21.4	28,410	16.00	455,830	3,387	1,582
1973.....	1,282	1,220	20.1	24,507	23.00 <sup>1</sup>	563,661 <sup>4</sup>	2,975	N.A.

<sup>1</sup>Most years from 1915 to 1923 include a small unknown quantity of beets grown in Canada for Michigan factories.  
<sup>2</sup>Basis of Crop Year including beets planted in previous fall in California and Arizona. <sup>3</sup>Includes production incentive payments which were payments made to producers of sugarbeets and sugarcane by the Commodity Credit Corporation during the period of government price control in World War II, to stimulate production, but excludes Sugar Act payments. <sup>4</sup>Preliminary. N.A.—Not available.  
Source: Statistical Reporting Service, U.S. Department of Agriculture.

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The 16 operating companies and the location of their refineries are as follows:

SuCrest Corporation .....Brooklyn, N.Y.  
   Chicago, Ill.  
   Charlestown, Mass.  
 Amstar Corp. ....Boston, Mass.  
   Brooklyn, N.Y.  
   Philadelphia, Pa.  
   Baltimore, Md.  
   Chalmette, La.  
 J. Aron & Co., Inc. ....Supreme, La.  
 California and Hawaiian  
   Sugar Co. ....Crockett, Calif.  
   Aiea, Hawaii  
 Colonial Sugars Co. ....Gramercy, La.  
 Everglades Sugar  
   Refinery, Inc. ....Clewiston, Fla.

Florida Sugar  
   Refinery, Inc. ....Belle Glade, Fla.  
 Glades County Sugar  
   Grower Cooperative  
   Assoc. ....Moore Haven, Fla.  
 Godchaux-Henderson,  
   Inc. ....Reserve, La.  
 Imperial Sugar Co. ....Sugar Land, Texas  
 Industrial Sugars, Inc. ....St. Louis, Mo.  
 The National Sugar  
   Refining Co. ....Philadelphia, Pa.  
 CPC International,  
   Inc. ....Yonkers, N.Y.  
 Savannah Sugar Foods  
   & Industries, Inc. ....Port Wentworth, Ga.  
 The South Coast Corp. ....Mathews, La.  
 Southdown, Inc. ....Houma, La.

Source: United States Cane Sugar Refiners' Association.

## BEET SUGAR PRODUCTION IN THE UNITED STATES, 1968 TO 1972 (Hundredweight, Refined)

State	1972	1971	1970	1969	1968	Average 1968 to 1972 Refined	Per Cent
California .....	20,272,399	19,488,983	20,424,415	16,314,519	16,253,094	18,550,682	28.43
Colorado .....	8,540,116	7,976,181	7,766,550	6,903,300	9,070,429	8,051,315	12.38
Idaho .....	8,312,133	7,401,036	6,836,540	7,521,358	7,382,771	7,490,768	11.48
Washington .....	5,384,975	5,147,838	3,371,486	4,538,724	3,717,507	4,432,106	6.79
Nebraska .....	3,583,562	3,173,868	2,750,854	3,049,424	3,056,543	3,122,850	4.78
Minnesota .....	3,326,197	3,618,291	3,599,260	4,784,928	4,646,989	3,995,133	6.12
Michigan .....	2,876,809	2,818,086	3,736,555	3,406,733	3,229,642	3,213,565	4.92
Montana .....	2,828,488	2,820,385	2,873,384	3,417,360	3,361,747	3,060,273	4.69
Wyoming .....	2,595,939	2,416,911	2,049,730	2,572,440	2,537,803	2,434,565	3.73
Oregon .....	2,157,834	1,997,965	1,924,624	2,261,500	2,610,273	2,190,439	3.35
No. Dakota .....	1,911,423	2,118,105	1,510,363	1,870,117	1,485,147	1,779,031	2.72
Arizona .....	1,472,829	990,396	960,997	925,000	869,566	1,043,758	1.60
Ohio .....	1,279,068	2,014,346	1,604,543	1,560,987	1,921,940	1,676,177	2.57
Texas .....	976,257	919,688	1,153,963	890,686	1,950,124	1,178,144	1.80
Utah .....	948,682	1,235,696	1,608,918	1,599,994	1,702,086	1,419,075	2.17
Kansas .....	926,757	990,830	872,125	633,797	858,898	856,481	1.31
Iowa .....	472,658	621,201	568,266	766,659	619,419	609,641	.93
Maine .....	.....	.....	.....	446,580	220,923	133,501	.20
New York .....	.....	.....	.....	.....	220,923	20,994	.03
<b>TOTAL—Cwt. ..</b>	<b>67,866,126</b>	<b>65,749,806</b>	<b>63,612,573</b>	<b>63,464,106</b>	<b>65,599,874</b>	<b>65,258,498</b>	<b>100.0</b>
<b>TOTAL—Short tons raw value..</b>	<b>3,630,838</b>	<b>3,517,615</b>	<b>3,403,273</b>	<b>3,395,330</b>	<b>3,509,593</b>	<b>3,491,330</b>	

Statistics by crop year, which is for spring planting and fall harvesting in first year named, except in Imperial Valley of California, where figure is for fall planting in first year named and spring harvesting in following year.  
 Source: United States Beet Sugar Association, Washington, D.C.

# LOUISIANA—SUGAR PRODUCTION—ACREAGE—YIELD

Crop Year	Sugarcane Used for Sugar			Sugar Produced		Raw Sugar 96° made per ton of sugarcane (Pounds) <sup>1</sup>
	Acreage harvested (1000 acres)	Average yield of cane per acre (Tons)	Production (1,000 tons)	Raw Value Basis <sup>1</sup> (In thousands of short tons)	Equivalent refined <sup>2</sup>	
1919-20.....	179	10.5	1,883	124	116	132
1920-21.....	183	13.6	2,493	173	162	139
1921-22.....	226	18.5	4,181	331	309	158
1922-23.....	242	15.6	3,778	301	281	159
1923-24.....	215	11.1	2,387	165	154	138
1924-25.....	163	7.5	1,228	90	84	147
1925-26.....	190	13.9	2,644	142	133	107
1926-27.....	128	6.8	864	48	45	111
1927-28.....	73	13.2	962	72	67	150
1928-29.....	130	14.3	1,860	135	126	145
1929-30.....	185	15.8	2,918	204	190	140
1930-31.....	175	14.6	2,559	188	176	147
1931-32.....	169	13.2	2,232	160	150	143
1932-33.....	208	13.9	2,886	228	213	158
1933-34.....	197	13.2	2,600	209	195	161
1934-35.....	222	14.3	3,164	234	219	148
1935-36.....	239	17.5	4,183	339	317	162
1936-37.....	227	21.4	4,854	386	361	156
1937-38.....	266	19.7	5,241	401	375	153
1938-39.....	272	21.5	5,859	491	459	168
1939-40.....	234	21.7	5,084	436	408	172
1940-41.....	211	13.8	2,923	234	219	160
1941-42.....	224	17.6	3,947	322	301	163
1942-43.....	269	17.6	4,734	397	371	168
1943-44.....	257	20.9	5,388	432	404	160
1944-45.....	246	20.0	4,929	369	345	150
1945-46.....	234	21.9	5,128	370	346	144
1946-47.....	255	17.6	4,484	331	309	148
1947-48.....	259	15.1	3,917	297	277	152
1948-49.....	274	19.2	5,257	393	367	150
1949-50.....	279	17.9	4,984	414	387	166
1950-51.....	273	19.5	5,312	451	421	170
1951-52.....	258	17.3	4,463	295	276	132
1952-53.....	274	20.7	5,667	451	422	159
1953-54.....	280	20.6	5,759	479	448	166
1954-55.....	247	22.8	5,625	478	447	170
1955-56.....	232	24.4	5,664	454	425	161
1956-57.....	203	23.7	4,817	429	401	178
1957-58.....	226	22.0	4,976	396	370	159
1958-59.....	219	22.0	4,869	443	414	182
1959-60.....	250	20.3	5,073	440	411	174
1960-61.....	255	21.9	5,583	470	439	169
1961-62.....	277	25.7	7,118	650	607	183
1962-63.....	254	20.9	5,315	472	441	178
1963-64.....	296	28.9	8,554	759	710	177
1964-65.....	325	22.7	7,383	573	536	155
1965-66.....	288	22.7	6,542	550	514	168
1966-67.....	288	22.7	6,563	562	526	171
1967-68.....	294	27.6	8,110	740	692	182
1968-69.....	282	26.1	7,377	669	625	181
1969-70.....	235	24.1	5,676	537	502	189
1970-71.....	266	26.1	6,927	602	563	174
1971-72.....	301	21.4	6,438	571	534	177
1972-73.....	311	25.8	8,022	660	617	165
1973-74*....	319	20.6	6,570	558	522	170

\* Preliminary.

<sup>1</sup> Production reported on 96° basis prior to 1934, raw value basis thereafter.

<sup>2</sup> Raw value multiplied by 0.9346.

Source: Agricultural Stabilization and Conservation Service, U. S. Department of Agriculture.



# FLORIDA — SUGAR PRODUCTION — ACREAGE—YIELDS

Crop Year	Sugarcane Used for Sugar			Sugar Produced		Raw Sugar 96" made per ton of sugarcane (Pounds) <sup>1</sup>
	Acres harvested (1000 acres)	Average yield of cane per acre (Tons)	Production (1,000 tons)	Raw Value Basis <sup>2</sup> (In thousands of short tons)	Equivalent refined <sup>2</sup>	
1928-29.....	0.7	18.6	13	1	1	115
1929-30.....	7	30.1	202	14	14	143
1930-31.....	12	28.8	351	27	25	152
1931-32.....	13	22.3	292	24	22	164
1932-33.....	13	33.4	421	37	35	177
1933-34.....	14	32.6	469	41	38	177
1934-35.....	14	27.8	383	28	26	148
1935-36.....	14	34.5	486	43	40	176
1936-37.....	17	34.0	565	52	48	184
1937-38.....	19	33.0	634	58	54	183
1938-39.....	24	36.4	882	93	87	211
1939-40.....	20	35.5	714	70	65	197
1940-41.....	29	32.1	933	98	91	209
1941-42.....	31	30.7	944	94	88	198
1942-43.....	21	30.6	648	61	57	187
1943-44.....	27	25.7	699	65	60	185
1944-45.....	27	28.8	780	69	64	176
1945-46.....	31	33.2	1,041	100	93	192
1946-47.....	32	32.6	1,037	94	88	181
1947-48.....	35	26.7	921	80	75	173
1948-49.....	35	28.7	1,010	80	75	158
1949-50.....	37	30.8	1,126	105	98	186
1950-51.....	37	31.3	1,169	109	102	186
1951-52.....	39	32.4	1,260	122	114	195
1952-53.....	43	34.9	1,495	154	144	207
1953-54.....	45	32.6	1,453	151	141	207
1954-55.....	39	32.6	1,258	132	123	210
1955-56.....	35	33.4	1,160	118	110	204
1956-57.....	30	39.7	1,197	128	120	214
1957-58.....	33	41.7	1,358	135	126	201
1958-59.....	34	37.8	1,303	135	126	208
1959-60.....	46.4	38.2	1,771	175	164	198
1960-61.....	48.9	31.8	1,554	160	150	205
1961-62.....	56.2	36.2	2,036	208	194	204
1962-63.....	114.3	35.4	4,050	380	355	188
1963-64.....	142.5	31.2	4,446	424	396	191
1964-65.....	219.8	29.3	6,439	574	536	178
1965-66.....	185.4	29.1	5,505	554	518	201
1966-67.....	190.7	31.8	6,057	652	609	215
1967-68.....	190.6	34.3	6,542	717	670	219
1968-69.....	182.1	29.5	5,368	546	510	203
1969-70.....	153.4	33.8	5,197	535	500	205
1970-71.....	170.0	33.4	5,670	652	609	230
1971-72.....	189.9	31.7	6,022	635	593	211
1972-73.....	243.5	38.1	9,289	961	898	207
1973-74*.....	265.0	30.6	8,119	824	770	203

\* Preliminary.

<sup>1</sup> Production reported on 96" basis prior to 1934, raw value basis thereafter.

<sup>2</sup> Raw value multiplied by 0.9346.

Source: Agricultural Stabilization and Conservation Service, U. S. Department of Agriculture.

## CANE SUGAR: PRODUCTION IN PUERTO RICO

Crop Year Ended	Acreage in Cane		Sugarcane Harvested		Sugar Produced, Raw Value	
	Grown	Harvested	Total	Per acre in cane harvested	Total	Per ton of cane harvested
	Acres	Acres	Tons	Tons	Tons	Pounds
1940.....	303,389	252,969	8,976,231	35.5	1,026,188	228.6
1945.....	335,791	288,617	7,994,229	27.7	970,751	242.9
1950.....	382,011	367,093	10,614,632	28.9	1,298,643	244.7
1955.....	439,035	361,053	9,872,968	27.3	1,166,026	236.2
1960.....	371,644	327,961	9,996,878	30.5	1,019,033	203.9
1961.....	361,990	328,138	10,749,805	32.8	1,109,232	206.4
1962.....	342,525	308,644	9,663,265	31.3	1,008,496	208.8
1963.....	337,526	303,041	10,122,518	33.4	989,235	195.5
1964.....	329,090	303,142	9,802,223	32.3	989,438	201.9
1965.....	316,263	287,644	8,806,972	30.6	896,943	203.7
1966.....	304,550	272,844	9,465,009	34.7	883,442	186.7
1967.....	280,851	263,336	8,160,195	31.0	818,294	200.6
1968.....	257,173	237,143	6,590,296	27.8	645,466	195.9
1969.....	235,166	180,069	5,901,967	32.8	483,532	163.9
1970.....	226,666	188,775	5,890,755	31.2	460,159	156.2
1971.....	N.A.	153,427	4,581,535	29.9	324,187	141.5
1972.....	N.A.	152,436	4,381,801	28.7	298,095	135.7
1973.....	N.A.	132,077	3,620,833	27.4	255,174	140.9

Source: Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture. N.A.—Not available.

## CANE SUGAR: PRODUCTION IN CUBA

Crop Year <sup>1</sup>	Acreage in cane		Sugarcane harvested		Raw sugar produced	
	Grown	Harvested	Per acre	Total <sup>2</sup>	Total <sup>2</sup>	Per ton of sugarcane <sup>2</sup>
	1,000 acres	1,000 acres	Short Tons	1,000 short tons	1,000 short tons	Pounds
1920...	2,085	2,041	18.78	38,335	4,243	221
1925...	2,695	2,469	21.09	52,068	5,894	226
1930...	2,800	2,648	16.40	43,435	5,305	244
1935...	1,974	1,643	15.12	24,847	2,883	232
1940...	2,325	1,883	16.58	31,220	3,157	202
1945...	2,528	2,343	12.90	30,224	3,923	260
1950...	3,014	2,885	16.26	46,916	6,126	261
1955...	3,554	2,059	18.64	38,381	5,001	261
1960...	3,457	3,104	16.82	52,212	6,462	247
1961...	N. A.	3,113	N. A.	N. A.	7,459	N. A.
1962...	N. A.	N. A.	N. A.	N. A.	5,308	N. A.
1963...	N. A.	N. A.	N. A.	N. A.	4,211	N. A.
1964...	N. A.	N. A.	N. A.	N. A.	4,400	N. A.
1965...	N. A.	N. A.	N. A.	N. A.	6,600*	N. A.
1966...	N. A.	N. A.	N. A.	N. A.	6,200	N. A.
1967...	N. A.	N. A.	N. A.	N. A.	6,874*	N. A.
1968...	N. A.	N. A.	N. A.	N. A.	5,859*	N. A.
1969...	N. A.	N. A.	N. A.	N. A.	6,100*	N. A.
1970...	N. A.	N. A.	N. A.	N. A.	8,250*	N. A.
1971...	N. A.	N. A.	N. A.	N. A.	6,600*	N. A.
1972...	N. A.	N. A.	N. A.	N. A.	4,837*	N. A.
1973...	N. A.	N. A.	N. A.	N. A.	5,787	N. A.

\* International Sugar Council.

<sup>1</sup> Harvesting usually begins in January and extends through June. The length of the growing season is normally 12 months.

<sup>2</sup> Some years cane for invert molasses is included in the cane production.

<sup>3</sup> Excludes liquid and green sugar.

N. A.—Not available.

Source: Foreign Agricultural Service, U.S. Department of Agriculture.

# CANE SUGAR: PRODUCTION IN THE PHILIPPINE ISLANDS

Crop Year <sup>1</sup>	Sugarcane				Sugar Produced			Molasses
	Acreage		Calculated production for centrifugal sugar		Centrifugal as made	Muscovada and Panocha	Centrifugal sugar made per ton sugarcane <sup>5</sup>	Produced
	Total <sup>2</sup>	Harvested for centrifugal sugar	Per acre <sup>3</sup>	Total <sup>4</sup>				
	1,000 acres	1,000 acres	Short tons	1,000 short tons	1,000 short tons	1,000 short tons	Pounds	1,000 gallons
1921.....	595	.....	.....	1,981	219	314	221	5,597
1922.....	562	.....	.....	2,106	259	217	246	2,609
1923.....	561	.....	.....	2,717	325	204	239	786
1924.....	592	.....	.....	4,954	552	228	223	1,277
1925.....	573	.....	.....	3,445	408	200	237	1,568
1926.....	587	.....	.....	5,023	587	180	234	1,153
1927.....	586	.....	.....	5,483	635	173	232	2,959
1928.....	637	.....	.....	6,771	769	157	227	5,405
1929.....	640	417	17.63	7,351	867	117	236	6,675
1930.....	633	387	20.20	7,816	871	87	223	11,817
1931.....	625	458	21.36	9,781	1,100	74	225	11,407
1932.....	663	512	22.36	11,449	1,285	58	224	25,372
1933.....	756	559	25.67	14,350	1,598	55	223	68,166
1934.....	522	325	18.59	6,044	700	54	232	52,993
1935.....	620	425	19.05	8,095	979	64	242	46,740
1936.....	635	436	21.87	9,535	1,118	68	234	52,836
1937.....	563	453	20.53	9,302	1,055	61	227	49,955
1938.....	568	392	23.54	9,227	1,092	57	237	49,448
1939.....	590	412	21.35	8,810	1,044	63	237	50,578
1940.....	551	373	23.42	8,734	1,035	113	237	49,163
1941-44	not available							
1945.....	72	16	7.31	117	13	56	222	546
1946.....	101	48	15.96	766	85	54	222	3,579
1947.....	203	182	19.70	3,586	398	38	222	16,972
1948.....	319	297	20.74	6,160	730	35	237	31,165
1949.....	346	316	19.18	6,062	693	36	229	28,469
1950.....	417	382	21.41	8,177	935	51	229	37,988
1951.....	496	466	21.36	9,952	1,077	62	216	51,957
1952.....	547	517	20.21	10,477	1,134	68	217	50,312
1953.....	655	545	23.92	13,038	1,434	76	220	64,082
1954.....	661	528	23.71	12,516	1,372	58	219	62,421
1955.....	596	468	23.23	10,871	1,219	60	224	49,108
1956.....	580	444	22.39	9,941	1,143	73	230	41,812
1957.....	599	463	25.30	11,712	1,378	75	235	60,091
1958.....	623	484	27.82	13,467	1,512	78	225	68,184
1959.....	597	504	27.29	13,754	1,529	64	222	66,053
1960.....	584	529	24.64	12,941	1,563	70	241	63,194
1961.....	592	535	26.74	14,306	1,618	41	226	67,547
1962.....	640	588	26.99	15,685	1,714	50	219	83,553
1963.....	760	722	24.13	17,421	1,856	52	213	101,480
1964.....	870	809	19.38	15,680	1,767	62	225	100,239
1965.....	790	735	19.92	14,641	1,590	63	217	79,042
1966.....	769	708	23.78	16,840	1,718	62	204	83,270
1967.....	810	756	22.47	16,989	1,759	63	207	94,433
1968.....	847	793	22.86	18,130	1,760	65	194	106,413
1969.....	986	932	25.35	25,630	2,124	66	180	152,082
1970.....	1,087	1,033	24.85	25,669	2,270	56	177	165,439
1971.....	1,126	1,080	20.92	22,597	2,062	59	182	144,594
1972.....	1,122	1,072	23.32	24,996	2,549	63	204	156,614
1973.....	1,144	1,100	23.20	25,518	2,589	56	203	160,558

<sup>1</sup> Harvesting begins in October. The length of the growing season being about 11 months.

<sup>2</sup> Total harvested acreage includes acreage for both centrifugal and noncentrifugal sugar. The acreage for noncentrifugal sugar has been estimated on the assumption 1 acre of cane yields about 1.5 tons of noncentrifugal sugar for the year 1949.

<sup>3</sup> Cane production divided by harvested acreage.

<sup>4</sup> Prior to 1951, calculated cane production is the quantity of cane ground for centrifugal sugar, estimated on the basis of the reported yield of sugar per ton of cane. From 1951 to date, the cane production is reported.

<sup>5</sup> As reported prior to 1950 and from 1952 to 1957. Other years computed.

<sup>6</sup> Preliminary.

Source: Foreign Agricultural Service, U. S. Department of Agriculture.

**EDIBLE SYRUPS: UNITED STATES PRODUCTION, FOREIGN TRADE, AND INDICATED DOMESTIC CONSUMPTION,  
1935-39, 1940-1944 AND 1945-49 AVERAGES, AND 1950-73**

(000 GALLONS)

Year	PRODUCTION <sup>1</sup>								IMPORTS				
	SYRUPS								Maple Syrup	Edible Molasses and Cane Syrup <sup>3</sup>	Shipments from Territories		
	Corn	Cane	Sorghum	Maple <sup>2</sup>	Refiners	Edible Molasses	Honey	Total			Honey	Honey	Total
1935-39 .....	91,110	22,855	14,328	2,723	2,930	4,970	15,343	154,259	101	2,048	15	182	2,346
1940-44 .....	137,377	18,741	11,409	2,571	7,804	6,273	16,709	200,884	268	4,083	1,429	135	5,915
1945-49 .....	143,145	20,255	8,851	1,510	11,648	8,971	18,842	213,222	319	1,074	1,275	89	2,757
1950 .....	130,448	9,745	3,539	2,006	4,005	3,314	19,780	172,837	479	2,214	1,020	30	3,743
1951 .....	131,831	8,775	3,671	1,742	4,971	4,339	21,923	177,252	323	2,050	692	.....	3,065
1952 .....	127,405	5,510	2,856	1,603	3,405	3,284	23,091	167,154	522	5,710	720	.....	6,952
1953 .....	131,767	5,540	2,418	1,208	3,907	4,077	18,996	167,913	442	1,793	831	.....	3,066
1954 .....	133,071	4,805	2,552	1,672	3,814	2,958	18,372	167,244	371	2,015	777	.....	3,163
1955 .....	138,226	4,730	2,405	1,578	3,853	2,820	21,666	175,278	457	2,305	837	.....	3,599
1956 .....	141,504	4,990	3,594	1,529	3,882	3,193	18,169	176,861	643	2,046	406	.....	3,095
1957 .....	142,089	3,965	2,516	1,697	3,620	2,384	20,447	176,748	757	573	404	.....	1,734
1958 .....	153,481	3,135	2,282	1,392	4,892	2,553	22,116	189,851	656	1,286	335	.....	2,277
1959 .....	162,197	3,617	2,286	1,137	3,999	3,084	20,083	196,403	691	2,138	383	.....	3,212
1960 .....	169,776	3,676	1,943	1,143	4,134	2,714	20,611	203,997	908	1,884	1,049	.....	3,841
1961 .....	180,397	3,519	.....	1,524	3,846	3,379	21,721	214,386	904	911	768	.....	2,583
1962 .....	201,259	3,303	.....	1,460	2,691	3,075	21,189	232,977	929	3,827	604	.....	5,360
1963 .....	215,573	2,702	.....	1,143	2,769	2,772	22,647	247,606	1,068	1,706	221	.....	2,995
1964 .....	238,832	2,814	.....	1,546	2,862	2,685	21,323	270,062	666	2,119	417	.....	3,202
1965 .....	243,682	2,989	.....	1,266	2,994	2,648	20,427	274,006	879	3,349	1,127	.....	5,355
1966 .....	252,337	2,923	.....	1,476	2,493	2,563	20,403	282,195	938	3,061	806	.....	4,805
1967 .....	255,860	2,121	.....	979	2,402	2,477	18,225	282,064	1,147	1,065	1,416	.....	3,628
1968 .....	274,000 <sup>4</sup>	2,346	.....	983	2,561	2,466	16,165	298,521	988	3,732	1,427	.....	6,147
1969 .....	282,000 <sup>4</sup>	2,661	.....	1,032	2,235	2,532	22,591	313,051	1,185	2,266	1,244	.....	4,695
1970 .....	292,000 <sup>4</sup>	.....	.....	1,110	1,695	2,121	18,736	315,662	956	2,165	749	.....	3,870
1971 .....	304,000 <sup>4</sup>	.....	.....	962	1,883	2,517	16,674	326,036	577	2,470	967	.....	4,014
1972 .....	352,000 <sup>4</sup>	.....	.....	1,099	2,077	2,290	18,071	355,537	710	1,694	3,291	.....	5,695
1973 <sup>5</sup> .....	410,000	.....	.....	877	2,309	1,926	20,119	435,231	803	2,935	900	.....	4,638

Year	EXPORTS				INDICATED DOMESTIC CONSUMPTION					
	Corn Syrup	Edible Molasses and Syrup including Maple <sup>6</sup>		Honey	Total	SYRUPS				
						Cane Syrup, Refiners Syrup, and Edible	Molasses	Honey	Total	
						Corn	Maple	Sorghum		
1935-39 .....	3,027	765	191	3,983	88,083	2,824	14,328	32,038	15,349	152,622
1940-44 .....	2,792	482	78	3,352	134,585	2,839	11,409	36,419	18,195	203,447
1945-49 .....	3,220	1,108	244	4,572	139,925	1,830	8,851	40,840	19,944	211,390
1950 .....	3,761	242	801	4,804	126,687	2,485	3,539	19,036	20,029	171,776
1951 .....	4,287	231	1,075	5,593	127,544	2,065	3,671	19,904	21,540	174,724
1952 .....	3,101	153	1,968	5,222	124,304	2,125	2,856	17,756	21,843	168,884
1953 .....	3,241	267	2,789	6,297	128,526	1,650	2,418	15,050	17,038	164,682
1954 .....	3,233	272	2,061	5,566	129,838	2,043	2,552	13,320	17,088	164,841
1955 .....	3,386	248	1,739	5,373	134,840	2,035	2,405	13,460	20,764	173,504
1956 .....	3,189	249	1,548	4,986	138,315	2,172	3,594	13,862	17,027	174,970
1957 .....	2,745	250	1,681	4,676	139,344	2,454	2,516	10,292	19,200	173,806
1958 .....	2,396	165	1,902	4,463	151,085	2,048	2,282	11,701	20,549	187,665
1959 .....	2,245	155	1,062	3,462	159,952	1,828	2,286	12,683	19,404	196,153
1960 .....	1,836	182	797	2,815	167,940	2,051	1,943	12,226	20,863	205,023
1961 .....	1,370	173	607	2,150	179,027	2,428	.....	11,482	21,882	214,819
1962 .....	1,514	140	1,158	2,812	199,745	2,389	.....	12,756	20,635	235,525
1963 .....	2,055	192	2,125	4,372	213,518	2,211	.....	9,757	20,743	246,229
1964 .....	1,632	205	760	2,597	237,200	2,212	.....	10,275	20,980	270,667
1965 .....	1,003	.....	1,166	2,169	242,679	2,145	.....	11,980	20,388	277,192
1966 .....	1,038	.....	1,219	2,257	251,299	2,414	.....	11,040	19,990	284,743
1967 .....	1,113	.....	986	2,099	254,747	2,126	.....	8,065	18,655	283,593
1968 .....	1,541	.....	684	2,225	272,459	1,971	.....	11,105	16,908	302,443
1969 .....	2,169	.....	833	3,002	279,831	2,217	.....	9,694	23,002	314,744
1970 .....	1,324	.....	688	2,012	290,676	2,066	.....	5,981	18,797	317,520
1971 .....	1,324	.....	640	1,964	302,676	1,539	.....	6,870	17,001	328,086
1972 .....	1,205	.....	346	1,551	350,795	1,809	.....	6,061	21,016	379,681
1973 <sup>5</sup> .....	1,377	.....	1,485	2,862	408,623	1,680	.....	7,170	19,534	437,007

<sup>1</sup>Production of cane syrup, sorghum syrup, and edible molasses is of the fall of the preceding year. Estimates of sorghum discontinued beginning 1961; cane syrup discontinued beginning 1969. <sup>2</sup>Does not include varying quantities produced on nonfarm lands in Somerset County, Maine. <sup>3</sup>U.S. Department of Commerce molasses and sugar syrups series, less liquid sugar imports reported to Sugar Division, Agricultural Stabilization and Conservation Service. <sup>4</sup>Unofficial estimates. <sup>5</sup>Preliminary. <sup>6</sup>Assumed to be largely refiners' syrup. Beginning 1965, data not available because of change in export classification.

Source: Economic Research Service. Data for 1949-58 in *Agricultural Statistics*, 1972, table 139.



## Part III

### U.S. SUGAR LAWS

Laws governing sugar in the United States are as old as the country itself. Following is a brief review.

#### SUGAR'S TAXATION HISTORY

Sugar is one of the world's most regulated commodities. Approximately 90 percent of total world production comes under some type of internal or external law or regulation.

Sugar in the United States has been under government regulation since the American Revolution.

The first piece of general legislation enacted by the first U.S. Congress in 1789 was the first sugar tariff of the United States.

It provided for a duty of one cent per pound on brown sugars; three cents on loaf; and, one and one-half cents on all other types of sugars.

From that time on, sugar tariffs provided a major source of revenue until the imposition of Federal income and corporate taxes.

Accordingly, the rates had a tendency to fluctuate somewhat depending upon the condition of the national treasury.

Because the purity of present-day refined sugars was unknown in the early days of the republic, complex tables of rates were required to assess the widely varying qualities of sugar which came into the U.S. from many parts of the world.

The Tariff Act of 1816 taxed loaf sugar at 12 cents per pound. There were other high tariffs during the Civil War period, after which tariff rates generally declined.

The Reciprocity Treaty of 1875 between the Kingdom of Hawaii and the United States provided for free entry of Hawaiian Sugar. Annexation in 1898 made Hawaii a domestic producer.

For four years beginning in 1890, sugar was placed on the free lists, and a bounty to encourage production was paid to domestic producers. Louisiana growers benefited most from this as the beet sugar industry was just getting underway and Hawaii was not yet a part of the United States.

The Spanish American War, beginning in 1898, had a major influence on American sugar supplies.

Puerto Rico in 1900 was given a preferential reduction in tariff charges. A year later, her sugar was placed on the free list.

The Philippines in 1902 received a 25 percent preferential tariff reduction. In 1909, she was permitted free entry on the first 300,000 tons of sugar exported to the U.S. In 1914, all of her sugar sales to the U.S. were placed on the free list.

Cuba in 1903 received a preferential tariff reduction of 20 percent below the full world tariff rate. Up to the early 1960's, Cuba retained a preferred tariff position among foreign suppliers of the American market. Cuba was considered America's sugar warehouse.

Because of political developments within Cuba and that country's slide into the Communist orbit, diplomatic relations between Cuba and the U.S. were severed in 1961 and its quota

#### SUGAR — LOW PRICED FOOD

Sugar in the United States is a low-cost food. The average American must work only 1.8 minutes to earn enough money to purchase a pound of refined sugar at retail—one of the smallest time-worked periods among modern nations of the world.

#### WORK TIME NEEDED TO PURCHASE ONE POUND SUGAR AT RETAIL, 1972

Country	Avg. Hourly Earnings in Mfg. <sup>1</sup> U.S. Dollars	U.S. Cents Per Min.	Retail Price for Sugar 1972 <sup>2</sup> (U.S. Cts.)	Minutes Worked Per Lb. of Sugar	Index U.S.= 100
U.S.	4.75	7.92	13.9	1.8	100
Canada	4.27	7.12	15.7	2.2	122
Japan	1.94	3.23	22.2	6.9	383
France	2.51	4.18	14.5	3.5	194
Netherlands	3.18	5.30	15.4	2.9	161
Sweden	4.21	7.02	19.9	2.8	156
U.K.	2.00	3.33	....	....	....
W. Germany	3.42*	5.70	15.4	2.7	150

<sup>1</sup>U.S. Dept. of Labor—Division of Foreign Labor Statistics—available only for developed countries.

<sup>2</sup>International Sugar Organization.

\*Feb. 1972 Exchange Rate.

subsequently allocated to other suppliers on a formula basis established by Congress.

The Philippines, granted independence by the United States in 1946, stayed on the free list until December 31, 1955. Its preferential tariff treatment phases out in 1974 at which time it will pay the standard tariff rate.

#### U.S. DUTIES ON FOREIGN SUGAR

Excluding those areas which have received preferential treatment, the tariff duty paid by other suppliers of the U.S. market has been changed eight times over the years since 1897 when it was set at 1.685 cents per pound. It dipped slightly in the 1914-21 period and then

## U. S. SUGAR CONSUMPTION\* AND POPULATION

### Five Year Intervals—1863-1928

Year	Total Sugar Consumption* (Short tons, raw value)	Population** (000's)	Per Capita Consumption (Pounds, refined value)
1863....	317,018	33,365	17.76
1868....	579,551	36,973	29.30
1873....	897,072	41,677	40.23
1878....	926,929	47,598	36.40
1883....	1,402,577	53,693	48.83
1888....	1,746,385	59,974	54.43
1893....	2,283,985	66,970	63.75
1898....	2,400,278	73,494	61.05
1903....	3,055,492	80,983	70.52
1908....	3,817,849	89,073	80.11
1913....	4,485,778	96,512	86.88
1918....	4,189,134	103,588	75.59
1923....	5,729,172	111,537	96.01
1928....	6,658,400	119,862	103.83

### Yearly Intervals—1929-1973

1929....	6,835,360	121,526	105.13
1930....	6,857,760	123,077	104.15
1931....	6,702,080	124,039	100.99
1932....	6,438,880	124,840	96.40
1933....	6,387,041	125,579	95.07
1934....	6,331,585	126,374	93.64
1935....	6,633,928	127,250	97.44
1936....	6,706,195	128,053	97.89
1937....	6,671,402	128,825	96.79
1938....	6,643,253	129,825	95.64
1939....	6,867,518	130,880	98.08
1940....	6,890,668	132,122	97.49
1941 (a)	8,069,457	133,402	113.06 (a)
1942....	5,466,204	134,860	75.76
1943....	6,334,713	136,739	86.59
1944....	7,147,350	138,397	96.53
1945....	6,040,569	139,928	80.69

\* Theoretical consumption. (Actually deliveries for consumption, and includes deliveries for U.S. military forces at home and abroad.)

\*\* Includes Alaska, excludes Hawaii.

Source: Lamborn Sugar Market Report.

Year	Total Sugar Consumption* (Short tons, raw value)	Population** (000's)	Per Capita Consumption (Pounds, refined value)
1946....	5,620,708	141,389	74.31
1947....	7,447,834	144,126	96.59
1948....	7,342,971	146,631	93.61
1949....	7,580,225	149,188	94.97
1950....	8,279,330	151,683	102.02
1951....	7,736,573	154,360	93.68
1952....	8,104,160	157,028	96.47
1953....	8,484,900	159,636	99.35
1954....	8,206,606	162,417	94.44
1955....	8,399,081	165,270	94.99
1956....	8,903,877	168,176	98.96
1957....	8,733,988	171,198	95.36
1958....	9,030,271	174,060	96.97
1959....	9,181,146	177,261	96.81
1960....	9,260,833	180,085	96.12
1961....	9,610,929	183,093	98.11
1962....	9,751,927	185,933	98.04
1963....	9,988,831	188,619	98.99
1964....	9,670,693	191,262	94.51
1965....	10,020,287	193,653	96.72
1966....	10,299,344	195,904	98.27
1967....	10,245,342	198,045	96.70
1968....	10,927,340	200,029	102.11
1969....	10,654,760	201,975	98.61
1970....	11,309,516	204,159	103.54
1971....	11,288,057	206,311	102.27
1972....	11,415,469	208,078	102.54
1973†..	11,482,498	209,628	102.38

(a) During 1941, a large quantity of the deliveries went into the building up of the "invisible" supply, and was not consumed during that year. In 1942, the major portion of this invisible supply was recaptured by the OPA and reallocated for consumption during 1942.

† Preliminary.

climbed to 2.5 cents a pound during the 1930-34 period and subsequently declined to its present level of 0.625 cents beginning in 1951.

### MODERN U.S. SUGAR LEGISLATION

The Depression of 1929 drove home the point that tariffs alone could not be the sole tool to regulate U.S. sugar supplies. In 1934, the Jones-Costigan Act amended the Agricultural Adjustment Act to include sugar as a basic commodity under the general farm program. It provided for a processing tax on refined sugar, for benefit payments to sugarbeet and sugarcane growers under production adjustment contracts, and for quotas for domestic and foreign areas supplying the U.S. market.

The Supreme Court in 1936 declared the benefit payments and taxes on sugar unconstitutional, but quotas were not questioned and continued in effect.

The Sugar Act of 1937, which embodied the basic principles of the Jones-Costigan Act, was signed into law September 1 of that year and continued in effect until succeeded by the current law, the Sugar Act of 1948. However, the quota system was suspended for several years during the 1940's because of World War II.

The Sugar Act of 1948 has been extended seven times with various amendments. The seventh extension was signed by President Richard M. Nixon in October 1971. The Act was extended for three years until December 31, 1974.

## U.S. SUGAR ACT

The United States Sugar Act, generally called the Sugar Act of 1948, as amended, is a federal law designed to achieve three major goals:

1. To assure consumers of adequate supplies of sugar at reasonable prices.
2. To maintain the domestic sugar industry.
3. To promote the export trade of the United States.

It was also designed to be self-supporting.

To a remarkable degree it has achieved these goals.

Since 1934 when the present law (or its predecessors) came into force, abundant supplies of sugar have been available to consumers at fair and reasonable prices. A vigorous sugar industry has developed within our national borders, yet day after day our ports receive sugar cargoes from friendly nations around the world.

There have been social gains too. Notably in the improvement of wages and working conditions of farm laborers.

The program has put more than \$600 million into the U.S. Treasury above its costs.

Finally, the cost of sugar has not kept pace with other food commodities. Only once in nearly four decades have sugar prices equalled the price index generally. At all other times,

the price of sugar has been well below the index of all food prices.

## HOW THE SUGAR ACT WORKS

The Act directs the Secretary of Agriculture in October of each year to estimate the consumption of sugar in the U.S. for the year ahead.

Once he has arrived at an estimate, the total amount of sugar it represents is allocated among domestic and foreign sources of supply by a formula set down in the Act. These allocations are quotas—the amount of sugar each area is permitted to market in the United States in the ensuing year.

Roughly 40 percent of the total is assigned to 34 foreign countries. Twenty-one of them are in the Western Hemisphere.

If, as the year advances, it appears that the Secretary of Agriculture's estimate of consumption is too high or too low, he may (indeed the law requires it) revise the estimate to meet the changed conditions. In the event that any area—domestic or foreign—is unable to fill its quota, the Secretary reallocates the deficit to fill the void and thus maintain an even flow of sugar to consumers.

Deficits in domestic areas and foreign countries are reallocated to foreign countries.

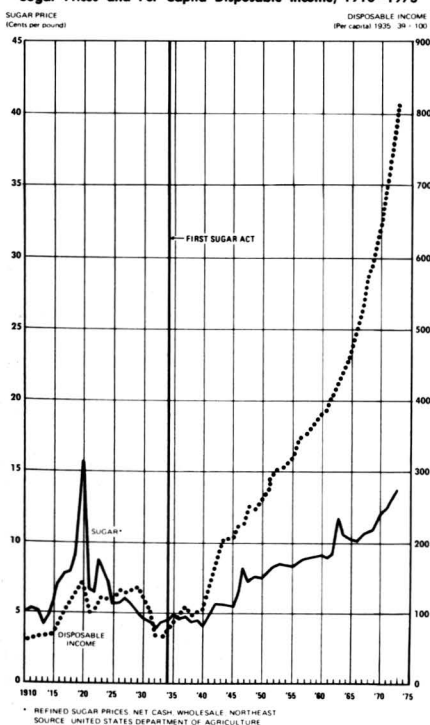
## PRICE OBJECTIVE

Under the 1971 extension of the Act, the Congress directed the Secretary, in establishing and revising the consumption estimate, to make available a supply of sugar that will meet the needs of consumers and attain the price objective.

The price objective is defined in the Act in terms of a price for raw sugar that will maintain the same relationship to the simple average of the index of prices paid by farmers (parity index) and the wholesale price index (1967=100 for both) as the relationship which existed between the average of the monthly price objective calculated under the 1965 Amendments for September 1, 1970-August 31, 1971, and the simple average of such indexes during the same period September 1, 1970-August 31, 1971.

The Act further provides that in order to attain the price objective on an annual average basis, the Secretary cannot change the estimate of consumption whenever the average price of raw sugar for seven consecutive market days is within a specified range of the price objective (3 percent for November through February, 4 percent for other months). Conversely, the Secretary is required to change the consumption estimate whenever the average price of raw

Sugar Prices and Per Capita Disposable Income, 1910-1973



sugar moves out of the "corridor" for seven consecutive market days.

By using as the price guide the average of the index of prices paid by farmers and the wholesale price index, the Congress has sought to accomplish more effectively two of the main objectives of the Act:

- (1) Protect the consumer against runaway sugar prices; and
- (2) provide the farmer some assurance of the price he may expect to receive for his crop.

This technique permits moderate increases in sugar prices as the cost of farming and family living increases, thereby providing the farmer a degree of economic stability and the consumer a measure of protection against undue price increases. The Congress has sought to assure the farmer that if he had to sell 350 tons of sugarcane to buy a pickup truck in 1967, that is all he will have to sell to make the same purchase at the present time. Thus the system provides a real measure of stability for both the farmer and the consumer.

## ORDERLY MARKET

The orderly operation of a quota system implies the existence of controls to prevent any single area from usurping more than its share of the market.

Control over foreign sugar supplies is rela-

tively simple. Customs officers can turn back "over-quota" sugar at our seaports. Customs can also prevent the entry of sugar into the United States from countries which have no quotas.

In the case of domestic production, however, controls of a different nature are required.

For example, if it appears that production of any domestic area will so far exceed its quota that disorderly marketing will result, or that all sellers will not have an equal opportunity to sell their fair share, the Secretary of Agriculture may impose marketing allotments.

These allotments divide an area's quota among the individual sugar companies in the area after consideration of individual company production records, marketing histories and so on. When it is necessary to bring production into line with quotas and inventory requirements, the Secretary also is authorized to impose acreage restrictions on the domestic production of sugarcane and sugarbeets.

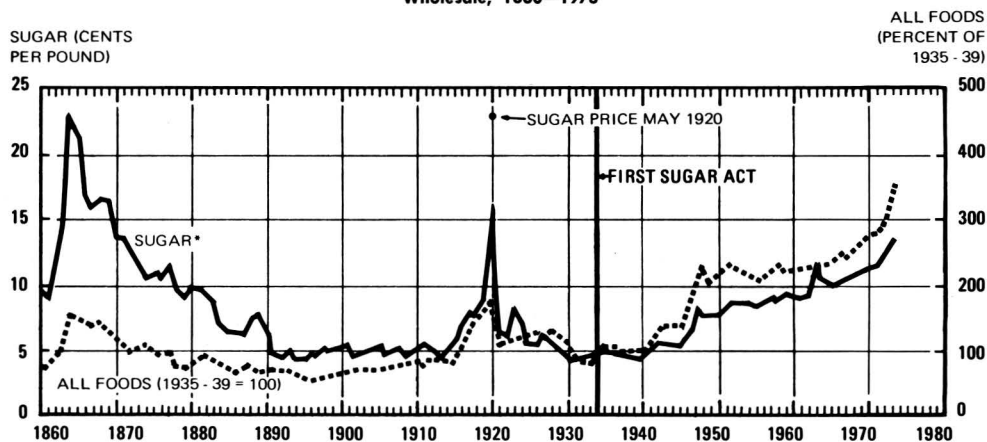
An orderly market achieved through quotas and, if necessary, acreage restrictions or marketing allotments, are tools supplied by the Sugar Act to help assure an adequate supply of sugar at a reasonable price to consumers.

## SELF-SUPPORTING PROGRAM

While quotas seem to receive the major attention in discussions of the U.S. sugar program, it is the unique financing program—a tax-payment arrangement—that makes the program operate.

The American farmer is still master of his acres and no Government agency can dictate

Refined Sugar Prices, and Index of All Food Prices At Wholesale, 1860-1973



\* REFINED SUGAR PRICES, NET CASH, NORTHEAST



the use to which his land is put in the absence of a *quid pro quo*.

In sugar, the "quid" is the so-called "conditional payment" for which a farmer qualifies only if he accepts the "quo" which is:

1. To conform to any limitation on production that may be imposed by the Secretary of Agriculture.
2. To pay wages to field workers at rates not less than those determined by the Secretary to be fair and reasonable.
3. To abide by a strict prohibition of child labor.
4. If the producer is also a processor, to pay others for their beets and cane at rates not less than those determined by the Secretary to be fair and reasonable.

The conditional payment system with its production controls makes it possible to adapt the domestic industry to the restraints implicit in a quota system.

It has also brought about a marked improvement in the wages of farm laborers, which are often higher than the minimum wages prescribed by law for industrial workers.

### CONDITIONAL PAYMENT RATES

The base rate for conditional payments is 80-cents a hundred pounds (\$16 a 2,000-pound ton) on the first 350 tons of sugar a farmer produces. Thereafter, the rate slides down to a minimum of 30-cents a hundred pounds (\$6 a ton) on all sugar produced in excess of 30,000 tons.

### CHARGES AGAINST SUGAR QUOTAS 1950, 1955, 1960, 1965-73 (Short tons, raw value)

Area	1950	1955	1960	1965	1966	1967
Domestic beet .....	1,748,701	1,797,327	2,164,692	3,024,978	3,024,142	2,823,695
Mainland cane .....	517,985	499,623	619,047	1,099,163	1,099,929	1,169,286
Hawaii .....	1,144,930	1,052,004	844,788	1,136,753	1,200,227	1,252,543
Puerto Rico .....	1,052,706	1,079,562	895,784	829,570	711,325	705,113
Virgin Islands .....	10,694	9,942	6,954	4,282	5,405	.....
Philippine Islands						
Quota Sugar .....	473,614	977,375	979,783	1,178,216	1,186,123	1,122,767
Cuba .....	3,264,303	2,861,937	2,393,663	.....	.....	.....
Other Foreign Countries: <sup>1</sup>						
Quota Sugar .....	61,396	118,524	434,208	2,647,150	3,128,093	3,310,126
Non-Quota Sugar..	.....	.....	1,187,487	.....	.....	.....
TOTAL .....	8,274,329	8,396,294	9,526,406	9,920,112	10,355,244	10,383,530

Area	1968	1969	1970	1971	1972	1973
Domestic beet .....	3,085,242	3,215,577	3,569,398	3,437,908	3,510,797	3,511,836
Mainland cane .....	1,203,921	1,169,303	1,307,714	1,255,353	1,630,310	1,613,382
Hawaii .....	1,191,704	1,159,820	1,145,486	1,086,852	1,113,163	1,141,757
Puerto Rico .....	504,081	341,231	352,331	143,301	148,151	75,516
Virgin Islands .....	.....	.....	.....	.....	.....	.....
Philippine Islands						
Quota Sugar .....	1,124,002	1,124,431	1,298,226	1,591,737	1,431,761	1,454,390
Other Foreign Countries: <sup>1</sup>						
Quota Sugar .....	3,841,660	3,724,608	3,878,794	3,778,441	4,005,463	3,878,866
TOTAL .....	10,950,610	10,734,970	11,551,949	11,293,592	11,839,645	11,676,301

<sup>1</sup>Excludes first ten tons imported.

Source: Agricultural Stabilization Service, U.S. Department of Agriculture.

## THE SUPPORTING TAX

Side by side with its provisions for conditional payments, the Internal Revenue Code imposes a tax on all sugar sold within the United States, whether domestic or foreign.

The rate of the tax is 53 cents per hundred pounds of refined sugar. This amount is less than the base rate for conditional payments to small farmers but substantially more than the rate of payment to large producers. It is equal to a tax of 50 cents per hundred pounds of raw sugar.

The tax is levied on all sugar sold in the United States—foreign or domestic—but conditional payments are made only to U.S. producers including those in Puerto Rico.

As a result, the arrangement consistently shows a net gain to the U.S. Treasury. In fact, collections by the Treasury under the Act have exceeded all expenditures, including the costs of administration and payments to producers, by \$600 million since 1934.

## SEPARATE LEGISLATION

The Sugar Act is separate legislation, requiring specific Congressional action apart from the general U.S. agricultural program.

## SUGAR ACT'S FUTURE IN DOUBT

The U.S. House of Representatives on June 5, 1974, by a vote of 209 to 175, rejected a bill which would have extended the 40-year-old Sugar Act through 1979.

This action came as sugar prices were climbing to an all-time high. Reportedly, some Congressmen felt the Sugar Act was responsible for the high cost of sugar to American consumers.

At the time this Sugar Manual goes to press, it is not known if Congress will consider other possible sugar legislation before adjournment, or if the Sugar Act will be allowed to expire on Dec. 31, 1974.

## CHARGES AGAINST DIRECT-CONSUMPTION SUGAR QUOTAS 1950, 1955, 1960, 1965-73 (Short Tons, Raw Value)

Area	1950	1955	1960	1965	1966	1967
Hawaii .....	29,639	29,609	5,942	3,290	293	563
Puerto Rico .....	125,871	125,669	154,339	144,892	155,158	160,815
Philippine Islands ....	6	9,600	43,342	34,805	14,781	20,281
Cuba .....	374,731	378,671	312,194	.....	.....	.....
Other Foreign Countries: <sup>1</sup>						
Quota Sugar .....	.....	40,558	70,630	6,396	7,255	9,168
Non-Quota Sugar..	.....	.....	17,484	.....	.....	.....
TOTAL .....	530,247	584,107	603,931	189,383	177,487	190,827
Area	1968	1969	1970	1971	1972	1973
Hawaii .....	4,285	4,717	7,934	4,053	3,867	4,015
Puerto Rico .....	164,508	129,959	122,258	83,577	59,927	58,788
Philippine Islands ....	20,316	5,393	10,357	11,033	13,015	12,922
Cuba .....	.....	.....	.....	.....	.....	.....
Other Foreign Countries: <sup>1</sup>						
Quota Sugar .....	9,167	8,544	9,167	7,266	6,207	1,116
Non-Quota Sugar..	.....	.....	.....	.....	.....	.....
TOTAL .....	198,276	148,613	149,716	105,929	83,016	76,841

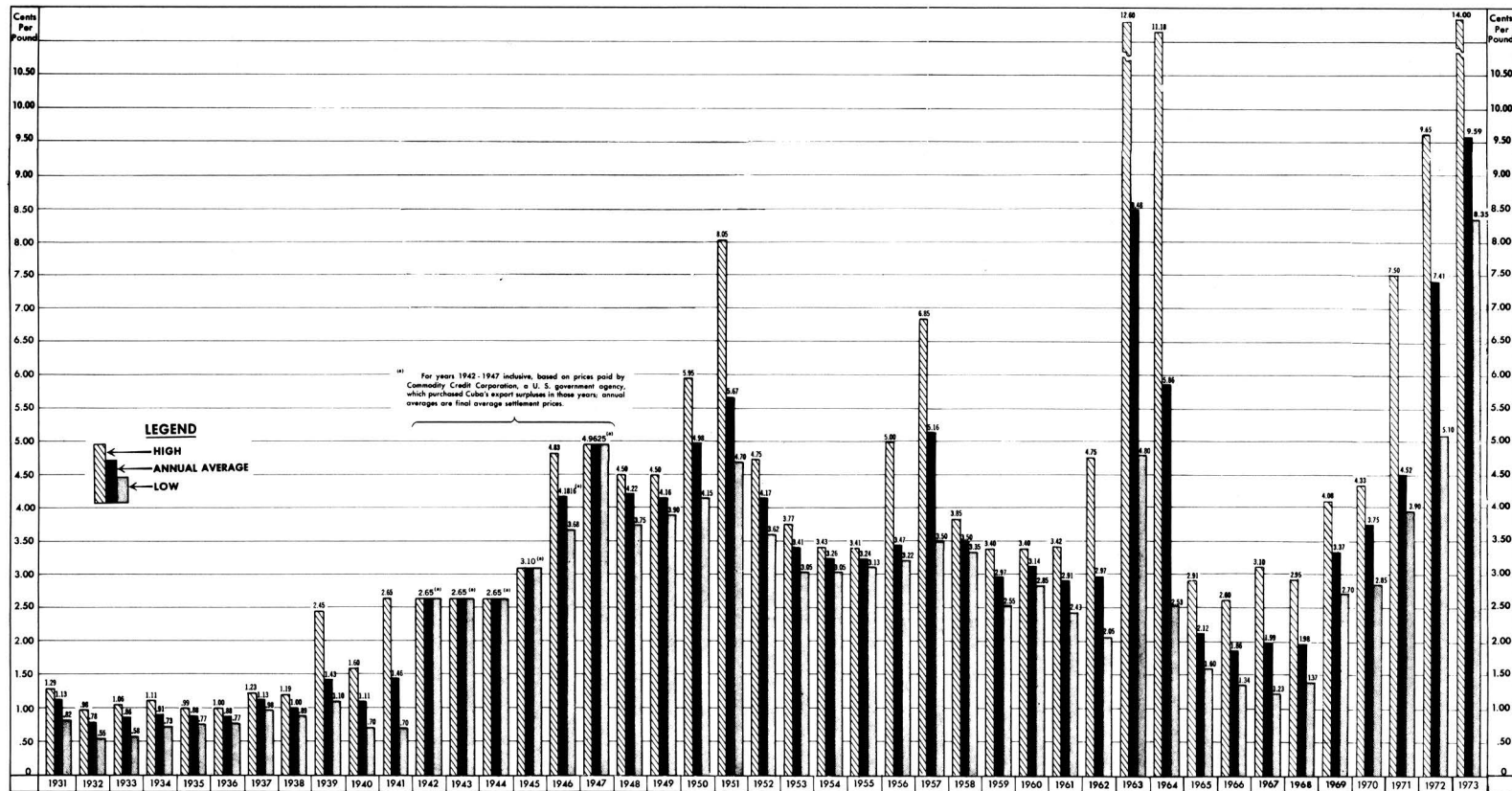
<sup>1</sup> Prior to 1953 there was no restriction in direct-consumption imports from full-duty countries.

Source: Agricultural Stabilization Service, U.S. Department of Agriculture.

# LAMBORN'S CHART OF WORLD SUGAR PRICES\* — 1931 - 1973

## HIGHS - ANNUAL AVERAGES - LOWS

### In Cents per Pound - Raw Sugar 96°



\* F. A. S. Cube Basis for 1931-1960; F. O. B. Stowed Bagged Basis for 1961-1970; F. O. B. Stowed Bulk Basis for 1971-1973

## Part IV

### WORLD PRODUCTION

Sugar, a basic food, is produced by some 110 nations throughout the world. F. O. Licht in Germany estimates that total sugar production in the 1973-74 season will be 80,493,199 tons. Of this, 47,817,225 tons will be cane sugar and 32,675,974 tons will be beet sugar.

In addition, another 11 million tons of non-centrifugal sugar will be produced, according to estimates.

### WORLD PRICE

In one form or another, the people of the world consume about 90 million tons of sugar each year. Most of it—70 percent—is consumed in the areas where it is grown. Another 20 percent is reserved for markets where the growers have government assistance or some form of preferential treatment.

The remaining 10 percent of world production—the fraction that has no “home”—constitutes the so-called “world market” or “free market.”

Prices in the world market are normally depressed, frequently below the cost of production in even the most efficient producing areas.

Critics of the sugar industry periodically contrast the distressed levels of the world market with prices in the United States and proclaim the difference to be the cost of the sugar program. This might be plausible if the world price represented an honest measure of values, but it does not.

The world price bears not the faintest relationship to costs of production, or to decent living standards. It is simply a dumping price and is so recognized universally.

It might be added that since all countries except Norway impose import levies on sugar, the world price is in truth an economic mirage.

The world market is at best a thin one, and, although it usually jogs along at fire-sale prices, any reduction in total world supplies can make it extremely volatile. In 1963, for example, when shortages in production occurred both in Continental Europe and Cuba, prices skyrocketed and a mad scramble of speculation resulted. The United States, through the operation of the quota system, was able to weather the crisis.

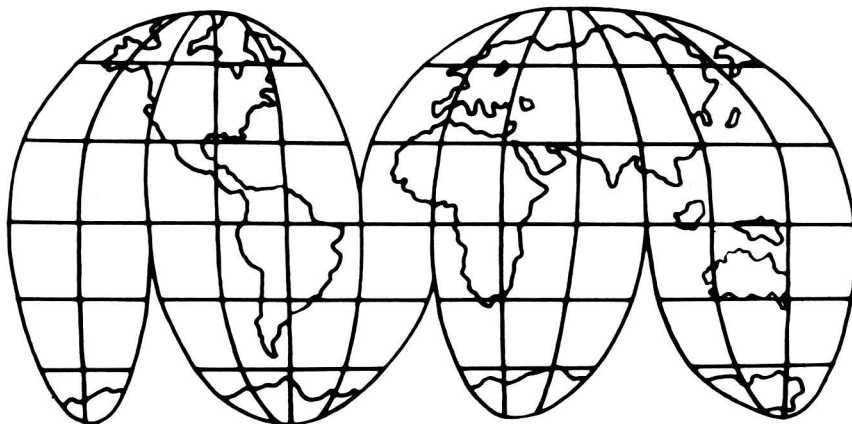
### INTERNATIONAL SUGAR AGREEMENT

An international conference was held in two stages at Geneva in 1973, under the auspices of the United Nations Conference on Trade and Development (UNCTAD), to negotiate a successor to the 1968 International Sugar Agreement which was due to expire on December 31, 1973.

Because of the circumstances prevailing at the time of the negotiations, the Conference failed to agree on the terms of an effective price stabilization agreement. Recognizing the need to continue efforts to bring about such an agreement at the earliest possible time, the Conference adopted an agreement devoid of economic clauses, which came into effect on January 1, 1974.

The main effect of the 1973 International Sugar Agreement is to keep in being the International Sugar Organization to carry out a study of the bases and framework of a new, fully effective International Sugar Agreement. In discharging this responsibility, the Council of the Organization has been authorized to arrange for studies to be made and discussions to be held between Members of the Agreement and with non-Members, as well as with other organizations. The Council has also been empowered to request the Secretary-General of UNCTAD to convene a negotiating conference as soon as it considers it appropriate.

*Cont. on Page 41*



# CENTRIFUGAL SUGAR: Production in Specified Countries,

(IN 000'S SHORT TONS)

Region and Country	Average 1964-65/ 1968-69	1969-70	1970-71	1971-72	1972-73	1973-74 <sup>2</sup>
<b><u>NORTH AMERICA:</u></b>						
Bahamas .....	3	25	0	0	0	0
Barbados .....	194	174	151	125	130	146
Belize .....	57	75	73	78	78	77
Canada .....	153	148	107	164	160	125
Costa Rica .....	134	166	171	197	196	213
Cuba .....	5,691	9,406	6,530	4,837	5,787	6,063
Dominican Republic .....	797	1,085	1,209	1,254	1,300	1,400
El Salvador .....	128	129	174	204	207	245
Guadeloupe .....	173	176	166	88	133	138
Guatemala .....	175	204	225	259	298	323
Haiti .....	63	66	72	75	74	77
Honduras .....	50	58	67	68	65	80
Jamaica and Dep. ....	511	412	437	423	376	419
Martinique .....	53	30	31	24	25	25
Mexico .....	2,536	2,648	2,729	2,778	3,053	3,172
Nicaragua .....	111	155	187	183	157	204
Panama .....	64	84	95	96	97	130
St. Kitts .....	41	30	28	29	26	28
Trinidad-Tobago .....	255	242	239	256	206	213
U.S.-Continental (beet) .....	3,039	3,471	3,321	3,531	3,663	3,200
U.S.-Continental (cane) .....	1,227	1,071	1,253	1,206	1,749	1,819
U.S.-Hawaii .....	1,211	1,162	1,286	1,124	1,155	1,157
U.S.-Puerto Rico .....	745	460	321	298	300	298
U.S.-Virgin Islands .....	2	0	0	0	0	0
<b>TOTAL .....</b>	<b>17,414</b>	<b>21,476</b>	<b>18,872</b>	<b>17,297</b>	<b>19,236</b>	<b>19,550</b>
<b><u>SOUTH AMERICA:</u></b>						
Argentina .....	1,093	1,069	1,001	1,092	1,427	1,830
Bolivia .....	104	125	90	130	136	204
Brazil .....	4,802	5,063	5,642	5,939	6,909	7,970
Chile .....	149	210	227	191	184	118
Colombia .....	609	774	758	871	905	970
Ecuador .....	211	230	250	287	276	287
Guyana .....	364	348	413	352	325	331
Paraguay .....	46	53	62	61	58	66
Peru .....	833	870	995	1,015	1,009	1,014
Surinam .....	19	16	15	12	14	13
Uruguay .....	68	49	49	64	83	79
Venezuela .....	416	467	542	570	563	613
<b>TOTAL .....</b>	<b>8,713</b>	<b>9,274</b>	<b>10,044</b>	<b>10,583</b>	<b>11,889</b>	<b>13,494</b>
<b><u>WESTERN EUROPE:</u></b>						
Austria .....	334	350	358	325	428	413
Belgium-Luxembourg .....	567	757	726	927	748	937
Denmark .....	375	335	295	358	377	441
Finland .....	56	60	66	69	97	96
France .....	2,346	2,974	2,972	3,530	3,285	3,715
Germany West .....	2,118	2,280	2,264	2,584	2,440	2,588
Greece .....	113	161	206	170	141	193
Ireland .....	151	162	165	201	193	220
Italy .....	1,452	1,526	1,321	1,367	1,381	1,317
Netherlands .....	724	845	787	923	833	959
Portugal (Azores & Madeira) ..	22	25	25	20	25	29
Spain .....	677	876	806	1,070	915	1,042
Sweden .....	275	228	241	294	328	303
Switzerland .....	66	72	65	82	75	77
United Kingdom .....	1,068	1,033	1,085	1,300	1,062	1,317
<b>TOTAL .....</b>	<b>10,342</b>	<b>11,684</b>	<b>11,382</b>	<b>13,219</b>	<b>12,329</b>	<b>13,648</b>



# —Average 1964-65/1968-69, Annual 1969-70/1973-74<sup>1</sup>

Region and Country	Average 1964-65/ 1968-69	1969-70	1970-71	1971-72	1972-73	1973-74 <sup>2</sup>
<b>EASTERN EUROPE:</b>						
Albania .....	16	18	19	16	21	21
Bulgaria .....	284	225	250	275	254	276
Czechoslovakia .....	1,038	800	850	772	859	854
Germany East .....	716	575	551	573	794	728
Hungary .....	508	500	300	309	335	413
Poland .....	1,888	1,683	1,659	1,887	2,017	2,023
Romania .....	477	500	420	490	636	639
Yugoslavia .....	481	545	390	464	441	595
TOTAL .....	5,408	4,846	4,439	4,786	5,356	5,549
TOTAL EUROPE .....	15,750	16,530	15,821	18,004	17,685	19,197
TOTAL U.S.S.R. ....	10,945	9,570	9,904	8,813	9,370	11,023
<b>AFRICA:</b>						
Egypt .....	438	450	450	500	650	716
Ethiopia .....	76	85	134	143	159	165
Kenya .....	65	138	147	140	112	118
Malagasy Republic .....	119	110	115	121	121	127
Mauritius .....	690	635	674	688	756	794
Mozambique .....	219	300	310	357	402	413
Reunion .....	256	275	230	201	250	276
Rhodesia .....	207	150	165	193	220	248
South Africa .....	1,572	1,788	1,542	2,056	2,111	1,984
Swaziland .....	149	173	180	207	188	209
Tanzania .....	86	100	103	99	110	121
Uganda .....	158	163	168	155	138	121
Zaire (Congo, K) .....	38	45	50	55	60	66
Other <sup>3</sup> .....	378	588	601	761	841	833
TOTAL .....	4,452	5,000	4,868	5,677	6,120	6,193
<b>ASIA:</b>						
Burma .....	84	100	125	127	132	110
China-People's Republic of .....	1,588	2,027	2,499	2,115	2,708	2,899
China, Rep. of (Taiwan) .....	995	678	916	822	860	937
India <sup>4</sup> .....	3,914	5,523	4,963	4,222	5,151	5,512
Indonesia .....	708	835	800	750	981	992
Iran .....	387	613	624	639	689	739
Japan .....	398	462	502	591	716	736
Nansei-Nanpo (Ryukyu) .....	237	275	238	150		
Pakistan .....	446	767	758	421	528	852
Philippines .....	1,719	2,124	2,270	2,062	2,549	2,590
Thailand .....	319	480	584	694	755	1,047
Turkey .....	785	600	709	1,003	893	898
Other <sup>5</sup> .....	122	128	120	184	246	299
TOTAL .....	11,700	14,611	15,108	13,782	16,208	17,611
<b>OCEANIA:</b>						
Australia .....	2,524	2,440	2,702	3,015	3,162	3,230
Fiji .....	393	347	421	376	413	419
TOTAL .....	2,917	2,787	3,123	3,391	3,576	3,649
WORLD TOTAL .....	71,891	79,250	77,739	77,547	84,085	90,717

NOTE: Due to rounding, may not add to area total.

<sup>1</sup> Years shown are crop year of the crop-harvesting season. For chronological arrangement here, all campaigns which begin not earlier than May of one year, nor later than April of the following year, are placed in the same crop-harvesting year. The entire season's production of each country is credited to the May/April year in which harvesting and sugar production began. Refined beet sugar is generally converted to raw value by multiplying by 1.087 while refined cane sugar is multiplied by 1.07 to obtain the raw value equivalent. <sup>2</sup>Preliminary. <sup>3</sup>Other Africa includes Afars-Issas, Algeria, Angola, Cameroon, Congo (Brazzaville), Ghana, Liberia, Malawi, Morocco, Nigeria, Somali Republic, Sudan, Tunisia and Zambia. <sup>4</sup>Includes khandasari. <sup>5</sup>Since January 1, 1972, included in Japan. <sup>6</sup>Other Asia includes Afghanistan, Ceylon, Iraq, Israel, Lebanon, Nepal, South Korea, South Vietnam and Syria. Bangladesh is included in other Asia beginning in 1971-72.

Foreign Agricultural Service. Prepared or estimated on the basis of official statistics of foreign governments, other foreign source materials, reports of U.S. Agricultural Attaches and Foreign Service Officers, results of office related information.

# SUGAR SUPPLY AND DISTRIBUTION BY COUNTRIES, 1973

(METRIC TONS—RAW VALUE)

(To convert to short tons, multiply by 1.1023—footnotes see page 39)

Countries	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
<b>NORTH AMERICA:</b>				
Canada .....	117,304	1,017,154	1,211,765	64,747
U.S.A. ....	5,731,864	4,834,879	10,633,753	3,896
U.S.A. (Mainland) .....	(4,476,011)	(4,834,879)	10,463,710	(3,896)
Hawaii .....	(1,025,248)	(0)	(37,043)	(0)
Puerto Rico & Virgin Isl. ....	(230,605)	(0)	(133,000)	(0)
TOTAL .....	5,849,168	5,852,033	11,845,518	68,643
<b>EUROPE:</b>				
Albania .....	19,000 <sup>1</sup>	13,855 <sup>4</sup>	37,000 <sup>1</sup>	0
Austria .....	371,096	0	394,948 <sup>1</sup>	22,278
Bulgaria .....	210,000 <sup>1</sup>	231,602 <sup>4</sup>	550,000 <sup>1</sup>	0
Cyprus .....	0	20,135	20,135	0
Czechoslovakia .....	730,000	148,470	650,000	225,145
E.E.C. ....	10,176,858	2,228,401	11,116,435	1,915,770
Finland .....	80,989	208,181	229,846	67,917
French Overseas Terr. <sup>7</sup> .....	0	23,500 <sup>1</sup>	23,500 <sup>1</sup>	0
Germany (East) .....	500,000 <sup>1</sup>	260,003 <sup>4</sup>	730,000 <sup>1</sup>	120,000 <sup>6</sup>
Gibraltar .....	0	1,100 <sup>6</sup>	1,100 <sup>1</sup>	0
Greece .....	158,000 <sup>1</sup>	141,073 <sup>4</sup>	210,000 <sup>1</sup>	0
Hungary .....	326,449	174,285	501,079	0
Iceland .....	0	9,590	10,000 <sup>1</sup>	0
Malta .....	0	22,315 <sup>4</sup>	20,000 <sup>1</sup>	0
Norway .....	0	168,643	170,467	0
Poland .....	1,823,040	28,117	1,549,173	422,124
Portugal: Mainland <sup>3</sup> .....	0	251,599	269,991	995
Azores & Madeira <sup>3</sup> .....	9,468	8,795	17,012	0
Roumania .....	560,000 <sup>1</sup>	78,174 <sup>4</sup>	575,000	105,000 <sup>6</sup>
Spain: Penin. & Bal. ....	891,476	78,777	1,000,000	44,984
Canary Isl. ....	0	43,472	55,000	3
Sweden .....	262,234	114,681	375,177	8,439
Switzerland .....	77,802	225,398	335,382	92
Turkey .....	735,975	0	912,983	3,696
U.S.S.R. ....	9,600,000	2,630,755	11,200,000	46,336
Yugoslavia .....	425,000 <sup>1</sup>	380,000 <sup>6</sup>	620,000 <sup>1</sup>	115 <sup>4</sup>
TOTAL .....	26,957,387	7,490,921	31,574,228	2,982,894
<b>SOUTH AMERICA:</b>				
Argentina .....	1,638,279	0	957,802	470,445
Bolivia .....	160,000 <sup>1</sup>	0	135,000 <sup>1</sup>	30,000 <sup>6</sup>
Brazil .....	6,937,176	0	4,266,325	2,975,306
Chile .....	100,000 <sup>1</sup>	260,000 <sup>6</sup>	365,000 <sup>1</sup>	0
Colombia .....	809,891	0	690,223	142,471
Ecuador .....	307,109	0	206,172	84,442
Guyana .....	280,283	29	34,664	237,798
Paraguay .....	69,000 <sup>1</sup>	0	60,000 <sup>1</sup>	10,000 <sup>6</sup>
Peru .....	897,634	0	484,084	407,011
Surinam .....	11,500 <sup>1</sup>	1,831 <sup>4</sup>	11,600 <sup>1</sup>	648 <sup>4</sup>
Uruguay .....	80,000 <sup>1</sup>	30,705 <sup>4</sup>	120,000	0
Venezuela .....	476,564	24,683	499,363	34,427
TOTAL .....	11,767,436	317,248	7,830,233	4,392,548

<u>Countries</u>	<b>SUPPLY</b>		<b>DISTRIBUTION</b>	
	<u>Production</u>	<u>Imports</u>	<u>Consumption</u>	<u>Exports</u>
<b>CENTRAL AMERICA:</b>				
Bahamas .....	0	6,497 <sup>4</sup>	6,500 <sup>1</sup>	0
Barbados .....	120,839	699	13,624	108,741
Belize .....	73,689	1,208	5,772	77,595
Bermuda .....	0	2,800 <sup>6</sup>	2,800 <sup>1</sup>	0
Costa Rica .....	203,000	0	100,000	116,000
Cuba .....	5,382,548	0	463,742	4,797,377
Dominican Republic .....	1,178,049	0	155,730	1,069,550
El Salvador .....	195,000 <sup>4</sup>	0	90,000 <sup>1</sup>	78,823 <sup>5</sup>
Guatemala .....	272,305	0	162,346	130,190
Haiti .....	60,000 <sup>1</sup>	6,180 <sup>4</sup>	50,000 <sup>1</sup>	13,875 <sup>5</sup>
Honduras .....	55,000 <sup>1</sup>	10,714	58,000 <sup>1</sup>	8
Jamaica .....	339,086	0	95,017	271,474
Leeward and Windward Isl. ....	24,463	5,489 <sup>1</sup>	18,000	22,167
Mexico .....	2,809,721	0	2,294,649	590,211
Netherlands Antilles .....	0	8,500 <sup>6</sup>	8,500 <sup>1</sup>	0
Nicaragua .....	172,000 <sup>1</sup>	0	85,000 <sup>1</sup>	79,160 <sup>5</sup>
Panama .....	86,820	0	44,000 <sup>1</sup>	45,533
Panama Canal Zone .....	0	2,650 <sup>1</sup>	2,650 <sup>1</sup>	0
Trinidad & Tobago .....	185,544	3,534	52,377	141,783
Virgin Isl. (U.K.) .....	0	500 <sup>1</sup>	475 <sup>1</sup>	0
TOTAL .....	11,158,064	48,771	3,709,182	7,542,487
<b>ASIA:</b>				
Afghanistan <sup>9</sup> .....	9,500 <sup>1</sup>	45,000 <sup>6</sup>	55,000 <sup>1</sup>	0
Bangladesh .....	34,762	93,316	115,104	0
Brunei .....	0	5,321 <sup>4</sup>	5,500 <sup>1</sup>	0
Burma .....	100,000 <sup>1</sup>	8 <sup>4</sup>	102,000 <sup>1</sup>	0
China (Mainland) .....	3,300,000 <sup>1</sup>	735,848	3,800,000 <sup>1</sup>	155,000 <sup>6</sup>
China (Taiwan) .....	832,275	0	309,684	507,684
Hong Kong .....	0	97,054	97,109	3,907
India .....	3,987,669	0	3,826,601	208,705
Indonesia <sup>3</sup> .....	875,000 <sup>1</sup>	307,074	1,000,000 <sup>1</sup>	0
Iran .....	650,000 <sup>1</sup>	302,797 <sup>4</sup>	900,000 <sup>1</sup>	0
Iraq .....	20,000 <sup>1</sup>	457,170 <sup>6</sup>	350,000 <sup>1</sup>	0
Israel .....	25,652	142,184	232,487	0
Japan .....	623,942	2,444,975	3,293,713	48,999
Jordan .....	0	19,968	50,000 <sup>1</sup>	0
Khmer Republic .....	0	10,000 <sup>1</sup>	14,500 <sup>1</sup>	0
Korea (North) .....	0	135,576 <sup>4</sup>	160,000 <sup>1</sup>	0
Korea, Republic of .....	0	312,044	259,260	50,153
Kuwait .....	0	81,862 <sup>4</sup>	35,000 <sup>1</sup>	10,000 <sup>1</sup>
Laos .....	0	4,300 <sup>6</sup>	4,500 <sup>1</sup>	0
Lebanon .....	11,000	53,949	78,936	13
Macao .....	0	3,076	3,020	0
Malaysia .....	15,954	341,706	339,562	10,578
Maldives, Republic of .....	0	3,500 <sup>6</sup>	3,950 <sup>1</sup>	0
Mongolia .....	0	27,132 <sup>4</sup>	28,000 <sup>1</sup>	0
Nepal .....	10,000 <sup>1</sup>	11,000 <sup>6</sup>	20,000 <sup>1</sup>	0
Pakistan .....	538,436	37,476	578,630	0
Persian Gulf .....	0	44,000 <sup>6</sup>	45,000 <sup>1</sup>	0
Philippines .....	2,250,000 <sup>1</sup>	0	800,000 <sup>1</sup>	1,385,133 <sup>5</sup>
Saudi Arabia .....	0	163,043	114,076	0
Singapore .....	0	110,462	87,408 <sup>2</sup>	19,268
Southern Yemen, Rep. of .....	0	37,488 <sup>4</sup>	42,000 <sup>1</sup>	0
Sri Lanka .....	10,000 <sup>1</sup>	169,321 <sup>4</sup>	200,000 <sup>1</sup>	0
Syrian Arab Republic .....	18,052	202,551	200,000 <sup>1</sup>	0
Thailand .....	839,324	0	433,027	258,294
Timor <sup>3</sup> .....	0	1,038	850 <sup>1</sup>	0
Vietnam (North) .....	0	86,785 <sup>4</sup>	72,000 <sup>1</sup>	3,814 <sup>5</sup>
Vietnam (South) .....	0	279,424	204,522	0
Yemen .....	0	45,000 <sup>6</sup>	48,000 <sup>1</sup>	0
TOTAL .....	14,151,566	6,811,448	17,909,439	2,661,548

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# SUGAR SUPPLY AND DISTRIBUTION BY COUNTRIES, 1973 - (cont.)

(METRIC TONS—RAW VALUE)

Countries	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
<b>AFRICA:</b>				
Algeria .....	25,000 <sup>1</sup>	278,500 <sup>4</sup>	280,000 <sup>1</sup>	0
Angola <sup>3</sup> .....	90,000 <sup>1</sup>	1	80,000 <sup>1</sup>	7,238
Botswana .....	0	11,600 <sup>1</sup>	11,800 <sup>1</sup>	0
Burundi .....	0	3,100 <sup>5</sup>	3,200 <sup>1</sup>	0
Cameroon .....	12,000 <sup>1</sup>	16,978 <sup>4</sup>	28,000 <sup>1</sup>	0
Cape Verde Islands <sup>3</sup> .....	0	4,787	5,000 <sup>1</sup>	0
Central African Republic .....	0	4,810 <sup>4</sup>	4,000 <sup>1</sup>	0
Chad .....	0	27,298 <sup>4</sup>	27,000 <sup>1</sup>	0
Congo (Brazzaville) .....	37,501	0	8,253	32,636
Dahomey .....	0	9,000 <sup>5</sup>	9,000 <sup>1</sup>	0
Egypt, Arab Rep. of .....	571,909	61,650	600,800	42,215
Equatorial Guinea .....	0	950 <sup>1</sup>	950 <sup>1</sup>	0
Ethiopia .....	139,695	77	114,579	35,007
Gabon .....	0	4,895 <sup>4</sup>	4,000 <sup>1</sup>	0
Gambia .....	0	4,143 <sup>4</sup>	4,000 <sup>1</sup>	0
Ghana .....	10,000 <sup>1</sup>	61,905 <sup>4</sup>	85,000 <sup>1</sup>	0
Guinea .....	0	13,000 <sup>5</sup>	13,000 <sup>1</sup>	0
Ivory Coast .....	0	65,870	68,619	0
Kenya .....	115,000 <sup>1</sup>	121,475 <sup>4</sup>	220,000 <sup>1</sup>	0
Liberia .....	0	7,939	7,937	0
Libya .....	0	91,193 <sup>4</sup>	85,000 <sup>1</sup>	0
Malagasy Republic .....	105,076	52	71,742	40,084
Malawi .....	49,994	1,874	37,827	18,610
Mali .....	10,000 <sup>1</sup>	27,878 <sup>4</sup>	37,000 <sup>1</sup>	0
Mauritania .....	0	22,290 <sup>4</sup>	20,000 <sup>1</sup>	0
Mauritius .....	760,782	20	37,485	738,823
Morocco .....	230,132	283,063 <sup>4</sup>	480,000 <sup>1</sup>	20,000 <sup>1</sup>
Mozambique <sup>3</sup> .....	335,000 <sup>1</sup>	0	125,000 <sup>1</sup>	183,203 <sup>5</sup>
Niger .....	0	13,689 <sup>4</sup>	12,543	0
Nigeria .....	30,000 <sup>1</sup>	140,987 <sup>4</sup>	160,000 <sup>1</sup>	0
Portuguese Guinea <sup>3</sup> .....	0	2,200 <sup>5</sup>	2,427	0
Rhodesia .....	225,000 <sup>1</sup>	0	115,000 <sup>1</sup>	120,000 <sup>5</sup>
Rwanda .....	300 <sup>1</sup>	2,800 <sup>1</sup>	3,000 <sup>1</sup>	0
St. Helena .....	0	220 <sup>1</sup>	225 <sup>1</sup>	0
St. Thome and Principe <sup>3</sup> .....	0	950 <sup>1</sup>	955 <sup>1</sup>	0
Senegal .....	0	80,147 <sup>4</sup>	85,000 <sup>1</sup>	0
Seychelles .....	0	2,021 <sup>4</sup>	2,400 <sup>1</sup>	0
Sierra Leone, Rep. of .....	0	29,927 <sup>4</sup>	28,500 <sup>1</sup>	0
Somalia .....	50,000 <sup>1</sup>	12,000 <sup>1</sup>	62,500 <sup>1</sup>	0
South Africa .....	1,953,100	1,234	1,068,110	914,708
Spanish Sahara .....	0	390 <sup>1</sup>	390 <sup>1</sup>	0
Spanish Poss. in N. Africa .....	0	6,804 <sup>5</sup>	7,500 <sup>1</sup>	0
Sudan .....	100,000 <sup>1</sup>	165,000 <sup>5</sup>	285,000 <sup>1</sup>	0
Swaziland .....	176,125	0	15,589	157,521
Tanzania <sup>3</sup> .....	107,139	47,218	148,239	36
Togo .....	0	8,628 <sup>4</sup>	8,000 <sup>1</sup>	0
Tunisia .....	4,500 <sup>1</sup>	114,413 <sup>4</sup>	120,000 <sup>1</sup>	0
Uganda .....	73,800	0	73,786	0
Upper Volta .....	0	10,554 <sup>4</sup>	14,000 <sup>1</sup>	0
Zaire, Rep. of .....	50,000 <sup>1</sup>	16,000 <sup>5</sup>	72,000 <sup>1</sup>	0
Zambia .....	63,630	5,446	80,184	0
TOTAL .....	5,325,683	1,784,976	4,834,540	2,310,081
<b>OCEANIA:</b>				
Australia .....	2,582,754	0	777,815	2,102,822
British Oceania .....	0	5,150 <sup>1</sup>	5,150 <sup>1</sup>	0
Fiji .....	303,227	242	28,177	275,823

# SUGAR SUPPLY AND DISTRIBUTION BY COUNTRIES, 1973 - (cont.)

(METRIC TONS—RAW VALUE)

Countries	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
New Zealand .....	0	160,085	162,202	0
U.S. Oceania .....	0	5,500 <sup>1</sup>	5,500 <sup>1</sup>	0
Western Samoa .....	0	3,359	3,400	0
TOTAL .....	2,885,981	174,336	982,244	2,378,645
WORLD TOTAL .....	78,095,285	22,479,733	78,685,384	22,336,846

## NON-CENTRIFUGAL SUGAR<sup>1</sup>

Production in Specified Countries, Average 1964-65/1968-69, Annual 1969-70/1973-74<sup>2</sup>  
(000's OF SHORT TONS)

Region and Country	Average 1964-65/ 1968-69	1969-70	1970-71	1971-72	1972-73	1973-74 <sup>3</sup>
<b>NORTH AMERICA:</b>						
Costa Rica .....	44	45	46	44	30	44
El Salvador .....	26	30	14	14	11	11
Guatemala .....	43	50	50	50	60	55
Mexico .....	130	127	127	125	127	127
Nicaragua .....	18	13	14	13	13	13
Panama .....	4	3	2	2	8	6
TOTAL .....	265	268	253	248	248	256
<b>SOUTH AMERICA:</b>						
Brazil .....	N.A.	N.A.	N.A.	N.A.	220	220
Colombia .....	721	739	772	805	744	772
Ecuador .....	41	44	44	44	44	44
Peru .....	15	14	14	14	15	17
Venezuela .....	41	42	40	39	36	39
TOTAL .....	818	839	870	902	1,060	1,091
<b>ASIA:</b>						
Burma .....	160	160	160	160	157	154
China, People's Republic of .....	732	800	805	810	816	882
China, Rep of (Taiwan) .....	27	26	29	25	28	29
India .....	5,732	6,614	7,165	7,165	6,614	7,165
Indonesia .....	330	340	340	254	202	165
Japan .....	9	6	4	3	14	14
Nansei-Nanpo (Ryukyu) .....	17	15	15	15	4	4
Pakistan .....	679	784	772	1,323	1,543	1,653
Philippines .....	65	66	51	51	63	57
Thailand .....	185	231	248	280	298	320
Vietnam South .....	29	10	10	10	11	11
TOTAL .....	7,966	9,052	9,598	10,095	9,744	10,451
WORLD TOTAL .....	9,048	10,159	10,721	11,246	11,053	11,798

NOTE: Due to rounding, may not add to area total.

N.A.=Not available.

<sup>1</sup>Noncentrifugal sugar includes all types of sugar produced by other than centrifugal process which is largely for consumption in the relatively few areas where produced. The estimates include such kinds known as piloncillo, panela, papelón, chancaca, radura, jaggery, gur, muscovado, panocha, etc. <sup>2</sup>Years shown are last year's crop-harvesting season. For chronological arrangements here all campaigns which begin not earlier than May of one year, nor later than April of the following year, are placed in the same crop-harvesting year. The entire season's production of each country is credited to the May/April year in which harvesting and sugar production began.

<sup>3</sup>Preliminary. <sup>4</sup>Since January 1, 1972, included in Japan.

Foreign Agricultural Service. Prepared or estimated on the basis of official statistics of foreign governments, other foreign source materials, reports of U.S. Agricultural Attaches and Foreign Service Officers, results of office research and related information.

← FOOTNOTES: SUGAR SUPPLY & DISTRIBUTION BY COUNTRIES, Pages 36, 37, 38, 39

<sup>1</sup>Estimated. <sup>2</sup>Calculated. <sup>3</sup>Tel Quel. <sup>4</sup>As reported by Countries of Origin. <sup>5</sup>As reported by Countries of Destination. <sup>6</sup>Partly estimated. <sup>7</sup>Comores, Fr. Terr. of Afars & Issas, French Oceania, New Caledonia, New Hebrides and St. Pierre & Miquelon. <sup>8</sup>Stocks in wholesale trade and industry. <sup>9</sup>Year ending 20th March, 1973.



# PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES

(In U.S. Cents per Pound)

Countries	Locality	Representative Prices			
		1972		1973	
		Wholesale	Retail	Wholesale	Retail
<b><u>NORTH AMERICA</u></b>					
Canada	Montreal	12.3	15.7	13.8	16.3
U.S.A.	whole country	13.1	13.9	.....	.....
<b><u>CENTRAL AMERICA</u></b>					
Belize	whole country	5.3	6.1	6.1	6.9
Cuba	whole country	.....	6.9	.....	.....
Dominican Rep.	whole country	8.0	9.0	6.0	8.0
El Salvador	whole country	9.0	10.0	.....	.....
Guatemala	whole country	7.2	8.0	7.1	8.0
Jamaica	whole country	10.0	10.3	13.0	13.5
Mexico	whole country	7.8	8.4	.....	.....
Trinidad & Tobago	whole country	9.0	9.5	12.0	12.5
West Indies:					
Barbados	whole country	15.0	19.0	18.5	23.0
Leeward Islands:					
St. Kitts-Nevis	whole country	17.0	18.0	17.0	26.0
<b><u>SOUTH AMERICA</u></b>					
Argentina	.....	10.3	11.2	16.7	18.0
Bolivia	whole country	6.3	6.6	.....	.....
Chile	whole country	3.3	3.6	.....	.....
Ecuador	whole country	.....	.....	4.7	5.5
Guyana	whole country	.....	.....	16.1	17.2
Paraguay	whole country	7.4	8.0	.....	.....
Peru	whole country	6.3	6.7	6.3	6.6
Uruguay	whole country	12.6	13.9	.....	.....
<b><u>EUROPE</u></b>					
Austria	whole country	11.1	12.7	11.3	13.1
Belgium	whole country	.....	16.7*	.....	21.5
Cyprus	whole country	12.2	13.8	16.6	17.4
Denmark	whole country	14.4	17.0	14.0	19.0
Finland	whole country	15.2	19.9	18.2	23.8
France	whole country	.....	14.5*	.....	17.9
Germany (West)	whole country	.....	15.4*	.....	19.3
Greece	whole country	19.6	22.0	.....	.....
Ireland	whole country	.....	.....	.....	.....
Netherlands	whole country	.....	15.4*	.....	19.4
Norway	Oslo	15.8	19.6	21.8	27.5
Portugal	whole country	.....	.....	12.9	14.5
Sweden	whole country	13.4	19.9	14.7	21.4
Switzerland	whole country	.....	.....	16.8	21.3
Turkey	Ankara	11.7	12.7	11.7	12.6
United Kingdom	whole country	.....	.....	.....	12.6
<b><u>ASIA</u></b>					
Bangladesh	whole country	.....	.....	25.7	26.6
China (Taiwan)	Taipei area	12.9	14.2	.....	.....
Hong Kong	whole country	13.2	18.0	26.0	35.4
India	Kanpur	.....	.....	13.29	13.4

\* Price on 1st January.

Cont. on Next Page  
Source: International Sugar Council

## PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES (cont.)

(In U.S. Cents per Pound)

		Representative Prices			
		1972		1973	
Countries	Locality	Wholesale	Retail	Wholesale	Retail
ASIA (cont.)					
Japan	Tokyo	17.3	22.2	21.8	26.3
Jordan	Amman	12.3	12.5	.....	.....
Korea (South)	whole country	.....	.....	20.1	21.8
Lebanon	whole country	10.6	11.4	10.6	11.4
Malaysia	East	12.0	14.0	12.5	15.0
	West	.....	.....	11.0	13.5
Philippines	whole country	7.4	8.0	.....	.....
Saudi Arabia	whole country	.....	.....	15.0	17.0
Singapore	whole country	9.7	10.7	12.9	13.3
Thailand	whole country	9.1	9.8	9.2	9.8
Vietnam (South)	whole country	20.0	22.0	22.6	24.9
AFRICA					
Congo (Brazzaville)	.....	9.3	13.0	.....	.....
Egypt Arab Republic	whole country	.....	.....	6.7	6.8
Ethiopia	whole country	13.2	14.8	15.1	16.4
Gambia	whole country	16.0	18.0	.....	.....
Malagasy Rep.	Tananarive	9.6	12.4	9.5	12.3
Malawi	whole country	9.0	12.0	9.0	12.0
Mauritius	whole country	4.0	5.0	4.0	5.0
Somalia	Mogadiscio	16.1	17.6	.....	.....
South Africa	Durban	8.4	9.2	8.8	9.7
Swaziland	whole country	9.8	13.5	.....	.....
Tunisia	whole country	13.1	13.6	.....	.....
OCEANIA					
Australia	capital cities	11.0	12.5	.....	.....
Fiji	main centers	5.3	5.9	5.6	6.8
New Zealand	4 main centers	9.5	10.7	.....	.....

\*Price on 1st January.

A total of 31 exporting and 17 importing countries are parties to the 1973 International Sugar Agreement. The United States, which participated in the 1973 U.N. Sugar Conference at Geneva but is not a party to the present Agreement, accepted an invitation to observe at sessions of the International Sugar Council and at discussions of the bases and framework of a future agreement.

### NEW YORK COFFEE AND SUGAR EXCHANGE, INC.

The world's largest market for trading in raw sugar is New York. Here are located the principal buyers and sellers, or their agents, of raw

sugar for the U.S. domestic market. In addition, a very large proportion of the sugars sold to world market buyers of sugar is also channeled through New York.

Of extreme importance in this market is the New York Coffee & Sugar Exchange, Inc., whereon sugars for both the U.S. and world markets are bought and sold for future delivery. The Exchange is located at 79 Pine Street, New York, N.Y. The Sugar Exchange, like all organized commodity markets, provides the opportunity for various vital economic functions to be performed.

The Exchange provides a market in which the sugar producer may hedge (sell) all or part

*Cont. on Page 42*

From Page 41

of his anticipated production and thus guarantee his price. Amongst other advantages, this facilitates financing. Conversely, the sugar buyer can determine a price far in advance by buying on the Exchange. This enables the buyer to anticipate his requirements and establish his cost.

Each day during trading hours, there is a ready market for buying and selling. This is not the case in actuals.

The Exchange is a public market with all quotations and trades a matter of open record. This permits all who are interested in sugar to know its value from day to day and, if necessary, minute to minute. Through the Exchange function, there is recorded the meeting of minds of buyers and sellers as to values as represented by trades or bid and asked prices.

The Exchange serves as a guidepost for the future by providing a means of trading for delivery in position as much as a year and a half ahead. The quotations, representing, as they do, the thinking of the keenest students of the sugar market, foreshadow coming events.

The Exchange disseminates information pertaining to sugar received from all corners of the earth.

To the Exchange trading floor come buying and selling orders which may emanate from all parts of the sugar world—from producers, refiners, merchants, sugar consumers. The public is also represented through the speculative activity which is a necessity for the creation of a broad, stable, realistic commodity market.

In the "ring," which is the designation of the area within which trades may be made, specialists known as "floor brokers" execute the buying and selling orders of their clients. All trading is done by open outcry and there are adequate safeguards to assure equitable treatment for all traders, be they large or small.

At the conclusion of each day's trading, all purchases and sales are submitted by the broker members of the New York Coffee & Sugar Clearing Association to that Association. The Clearing Association intervenes as a principal in each transaction. It becomes the buyer on each sale made and the seller on each purchase made—thus protecting the integrity of all contracts made on the Exchange.

The brokers deposit margins with the Clearing Association as a guarantee that the contracts will be fulfilled. These margins are, moreover, maintained adequately each day as the market fluctuates.

An additional protection is afforded through the Guarantee Fund of the Clearing House which is created by a deposit made by each firm at the time it joins the Clearing Associa-

tion. The Guarantee Fund is available to make good any default by a member firm.

## NEW YORK SPOT SUGAR PRICES

### DOMESTIC NO. 10 SPOT

This is the quotation at 2 P.M. for raw centrifugal cane sugar, reasonably due within 45 days, basis 96°, in bulk (net, without bag allowance), dutypaid or dutyfree, deliverable in customary North Hatteras refining ports.

Only sugar permitted to be processed or consumed without penalty under any quota or allotment plan decreed by the U.S. Government or its agencies qualifies for quotation making.

The Quotation Committee consists of five members of the Exchange. Two are generally selected from refiner-members of the Exchange to represent the buyers' viewpoint, and three from the importing firms and/or brokerage houses to represent the sellers' viewpoint. The Committee follows a rather definite formula, but is not bound by rigid inflexible rules in arriving at its daily quotation. It takes into consideration not only actual sales of raw sugar but also bids and offers received by or known to members of the Committee, and perhaps substantial changes in the price of the nearest active futures month on the Exchange. Sales involving the simultaneous purchase and sale of futures by the parties to the transaction (generally referred to as "AA" trades) are excluded, as well as sales of raws by one refiner to another.

### WORLD NO. 11 CONTRACT

This is a world sugar contract approved May 1, 1970 by the membership of the New York Coffee & Sugar Exchange. Trading began May 5 for delivery in July 1970 and subsequent months.

It was adopted by the Exchange because of the dramatic increase in the movement of sugar in bulk.

The No. 11 Contract contains provisions which adapt it to the International Sugar Agreement of 1968.

Under the No. 11 Contract, sugar will be deliverable f.o.b. and stowed in bulk. Warehouse deliveries will not be available. Trading months will be January, March, May, July, September and October. Activity may be carried for a period of up to 18 months in the future.

The contract services the major non-Communist sugar-producing nations. Deliverable growths under the No. 11 Contract are growths of Argentina, Australia, Brazil, British Honduras,

Colombia, Costa Rica, Dominican Republic, El Salvador, Ecuador, Fiji Islands, French Antilles, Guatemala, Haiti, Honduras, India, Jamaica, Mauritius, Mexico, Nicaragua, Peru, Republic of Congo (Brazzaville), Republic of the Philippines, Reunion, South Africa, Swaziland, Taiwan, Thailand, Trinidad and Venezuela, delivered f.o.b. and stowed in bulk.

Units of trading and price fluctuation are 50 long tons (112,000 pounds) and a maximum fluctuation of 1/2-cent per pound from the previous day's settlement price, with the exception of Barbados and St. Kitts.

## **N.Y. TRADING HOURS**

Trading hours of the Exchange are:

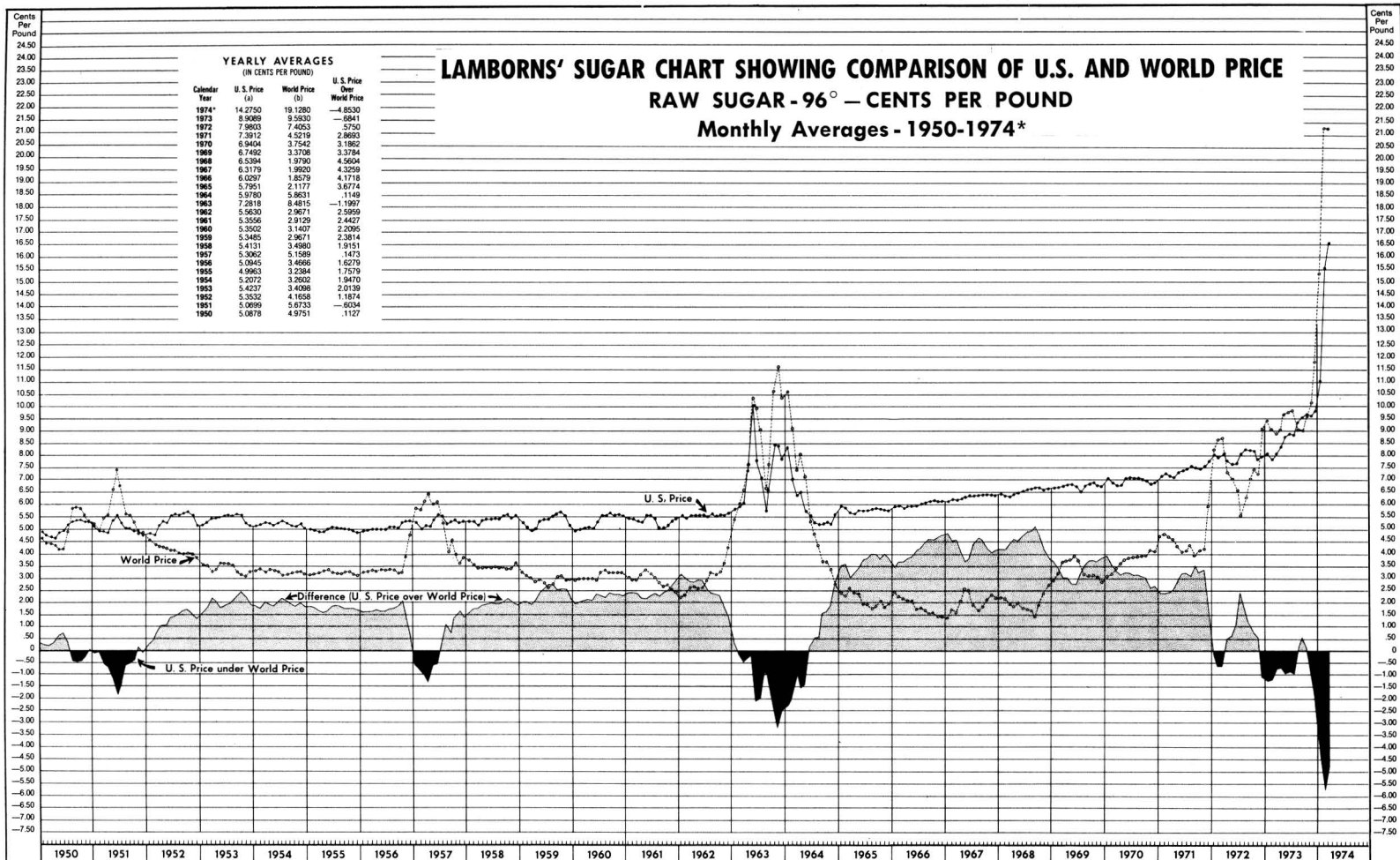
Domestic Sugar Contract No. 10 — 10:00 a.m.  
to 2:50 p.m.

World Sugar Contract No. 11 — 10:00 a.m. to  
3:00 p.m.

# YEARLY AVERAGES (IN CENTS PER POUND)

Calendar Year	U. S. Price (a)	World Price (b)	U. S. Price Over World Price
1974*	14.2750	19.1280	-4.8530
1973	19.9080	9.9520	9.9560
1972	7.9803	7.4053	0.5750
1971	7.3912	4.5219	2.8693
1970	6.9404	3.7542	3.1862
1969	6.7492	3.3708	3.3784
1968	6.5394	1.9790	4.5604
1967	6.3179	1.9920	4.3259
1966	6.0297	1.8579	4.1718
1965	5.7951	2.1177	3.6774
1964	5.9780	5.8631	0.1149
1963	7.2818	8.4815	-1.1997
1962	5.5630	2.9671	2.5959
1961	5.3556	2.9129	2.4427
1960	5.3502	3.1407	2.2095
1959	5.3485	2.9671	2.3814
1958	5.4131	3.4980	1.9151
1957	5.3062	5.1589	0.1473
1956	5.3945	3.4695	1.9250
1955	4.9963	3.2384	1.7579
1954	5.2072	3.2602	1.9470
1953	5.4237	3.4038	2.0199
1952	5.3532	4.1658	1.1874
1951	5.3999	5.6733	-0.2734
1950	5.0878	4.9751	0.1127

## LAMBORNS' SUGAR CHART SHOWING COMPARISON OF U.S. AND WORLD PRICE RAW SUGAR - 96° - CENTS PER POUND Monthly Averages - 1950-1974\*



\* To March 31, 1974.

(a) For 1971-1974, F.O.B. stored Greater Caribbean (including Brazil) bulk basis.  
(b) For 1971-1974, F.O.B. stored Greater Caribbean (including Brazil) bagged basis.  
1950-1960, F.A.S. Cuban bagged basis.

(c) For 1971-1974, based on No. 11 Contract — F.O.B. stored Greater Caribbean (including Brazil) bulk basis.  
1961-1970, based on No. 8 Contract — F.O.B. stored Greater Caribbean (including Brazil) bagged basis.  
1950-1960, based on No. 4 Contract — F.A.S. Cuban bagged basis.



## Part V

### MISCELLANEOUS

#### INDUSTRY RESEARCH & EDUCATION

The sugar industry supports a broad program of research and education through two agencies—

THE SUGAR ASSOCIATION, INC.

INTERNATIONAL SUGAR RESEARCH  
FOUNDATION, INC.

Both are non-profit membership corporations organized under the laws of the State of New York. Members include cane sugar refiners, sugar beet processors and raw sugar producers in the United States.<sup>1</sup> The International Sugar Research Foundation is also supported by sugar companies and associations in Canada, Great Britain, Belgium, Ireland, Finland, Portugal, Panama and South Africa. Each of the corporations has distinct functions to perform.

The Sugar Association, incorporated in 1949, enters into membership arrangements with the various American sugar companies, exercises control and direction in matters of general policy and allocates funds to carry on the industry programs which were formerly carried out by Sugar Information, Inc., now dissolved.

The Sugar Association's functions include public relations and advertising programs as well as serving the industry's non-research activities such as educational work, advocating proper standards for processed foods and affirming the rightful place of sugar in the diet and as a raw material in industry. In general, its activities are in the non-technical field. It works with industrial users of sugar and with the technical sales services of cane sugar refiners and beet sugar processors. It has developed a notably successful series of publications on sugar for consumer and media use.

International Sugar Research Foundation was incorporated in 1943 as Sugar Research Foundation, Inc., for the purposes of increasing knowledge of the rightful place of sugar in the diet, the optimum levels in food products and the potentials of sugar for use for non-food chemical and industrial purposes, all with the objective of increasing the consumption of sugar in ways consistent with the public interest. The change to International Sugar Research Foundation took place on July 1, 1968. Since 1943, several hundred research projects have been supported by Foundation grants to educational and other non-profit research institutions and by contract with research organizations with total expenditures of over \$6 million.

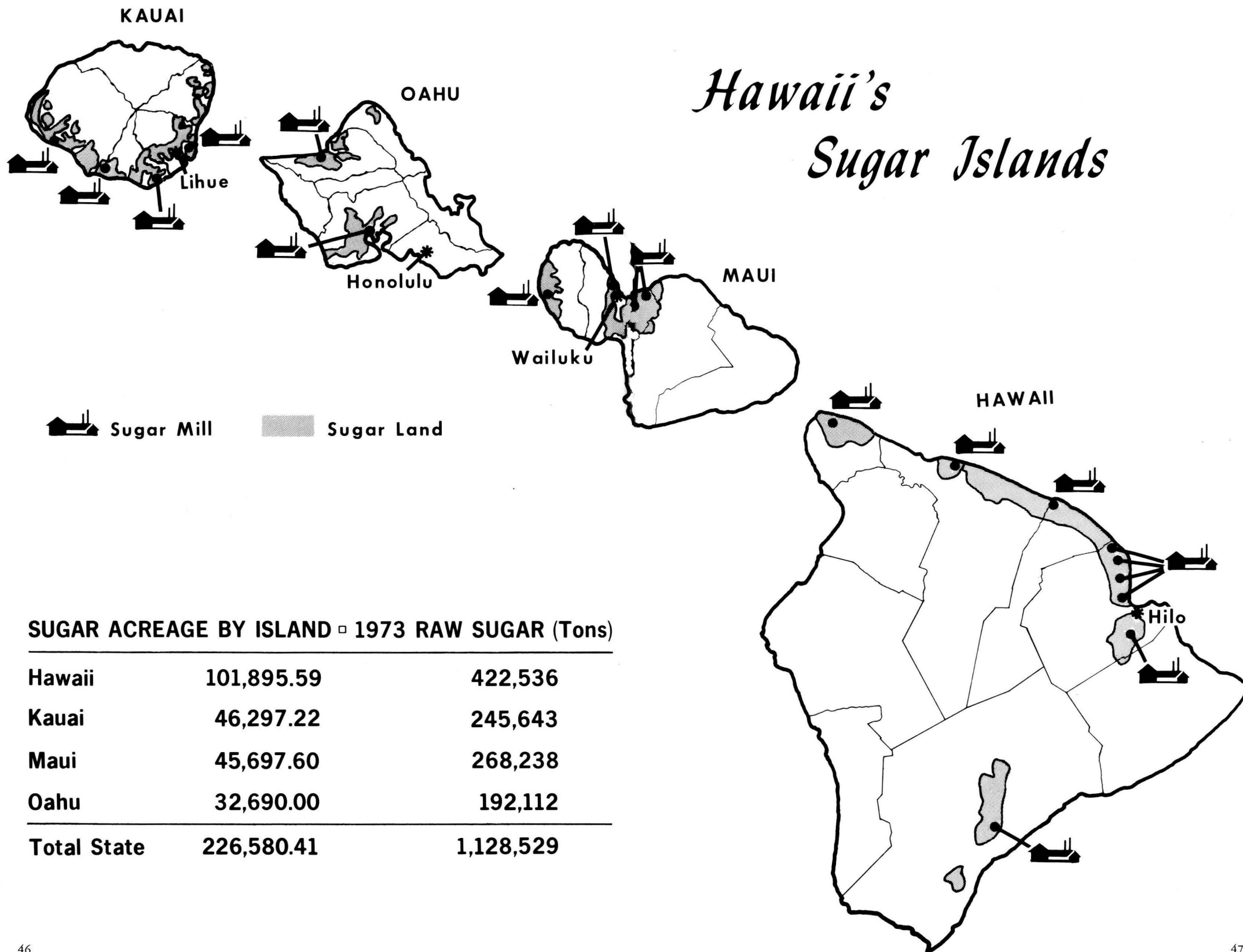
Food technology is of prime importance because about 98% of all the sugar which is distributed in the United States is consumed

as food, and 73% of it is in the form of processed foods, beverages and confections. Research has demonstrated that many food processors have underestimated the sweetness level or sugar content which consumers prefer in, for example, canned peaches, dessert cherries, ice cream, peas and whole kernel corn. Sugar has been found to have preeminent properties in enhancing the flavor of foods.

Research to develop new non-food uses for sugar in the chemical and manufacturing industries is another important field of work. No major non-food use has matured, but the sugar esters surfactants continue to attract attention for potential commercial production because of the current emphasis on reduction of water pollution. Their potential usefulness in drying oils for surface coatings, as developed by the Foundation's sponsored research, is being assessed. Current policies have placed additional emphasis upon research in the area of public health and in making all research results available for publication so they may be of increasing benefit to the member companies.

The Sugar Association and the International Sugar Research Foundation exist for the purposes of serving the industry by learning the truth about its product, by disseminating through education the truth about sugar, and through research, by seeking new uses for sugar as well as increasing sugar knowledge generally.

<sup>1</sup> Hawaiian Sugar Planters' Association, the California and Hawaiian Sugar Company, and a few other United States members resigned from the International Sugar Research Foundation effective June 30, 1974.



## GLOSSARY

**BAGASSE:** Fibrous residue remaining after sugarcane has been milled to extract the sugar-containing juices.

**BLACKSTRAP MOLASSES:** The final product remaining after all the commercially recoverable sucrose has been removed from the juices expressed from cane. This is a dark colored, heavy, viscous liquid.

**BRIX:** The measure of density of a solution, more particularly a solution containing sucrose, as determined by a hydrometer.

**CALORIE:** Unit expressing the energy-producing value of food. A pound of sugar contains 1,790 calories. A standard teaspoon contains 18.

**CHANCACA:** Raw sugar in prismatic loaves.

**COSSETTES:** Thin strips into which sugarbeets are sliced preparatory to the extraction of sugar.

**DEXTROSE:** A widely occurring crystallizable, simple sugar which contains 6 carbon atoms in contrast to 12 found in sucrose. It is obtained in commercial quantities by the action of acid on cornstarch. It is less sweet than sucrose.

**FRUCTOSE:** An alternate chemical name for levulose.

**GLUCOSE:** (1) An alternate chemical name for dextrose. (2) A name given to corn syrups which are obtained by the action of acids and/or enzymes on cornstarch. Commercial corn syrups are nearly colorless and very viscous. They consist principally of dextrose and another sugar, maltose, combined with gummy organic materials known as dextrans, in water solution.

**GUR:** Cane juice, concentrated nearly to dryness by boiling over an open fire, without centrifuging and with no other purification than by skimming. This ancient process is still used for producing a large share of the sugar consumed in India and some other countries. The crude product is high in glucose and correspondingly low in sucrose.

**HIGH TEST MOLASSES:** A concentrated, clarified cane juice which has been inverted (usually about 2/3) to prevent sucrose from crystallizing at the high concentrations normally employed.

**INVERT OR INVERT SUGAR:** This is the mixture of equal parts of dextrose and levulose produced by the action of acid or enzymes on solutions of sucrose.

**JAGGERY:** Unrefined brown sugar made especially from palm sap (as in India).

**KHANDSARI:** An open-pan sugar which after boiling is transferred to a clay pitcher and allowed to remain in it until complete crystallization takes place.

**LEVULOSE:** A highly soluble, simple sugar, also containing 6 carbon atoms. It crystallizes with great difficulty. It is not produced in commercial quantities as such but used in considerable quantities in combination with dextrose and sucrose in invert sugars. It is generally considered sweeter than sucrose.

**LIQUID SUGAR:** A concentrated solution of refined sucrose or of a mixture of sucrose and invert sugar.

**MASSECUITE:** A dense mass of sugar crystals mixed with mother liquor obtained by evaporation.

**MOLASSES:** The mother liquor separated from sugar crystals in massecuite.

**MUSCOVADO:** Unrefined or raw sugar obtained from the juice of the sugarcane by evaporation and draining off the molasses.

**PANELA:** Low-grade brown sugar; generally comes in round chunks that resemble loaves of bread.

**PANOCHA:** Mexican raw sugar.

**PAPELON:** Crude brown sugar produced especially in Cuba and Northern South America.

**PILONCILLO:** An unrefined sugar, especially when molded into cones or sticks.

**POLARIZATION:** Designated as "pol" and is the value determined by direct or single polarization of the normal weight solution (of sucrose) in a saccharimeter or polariscope. (Based on Spencer and Meade.)

**RAPADURA:** Raw sugar in Brazil.

**RATOON:** Second and subsequent crops grown from the root systems of previous plantings of sugarcane. Usually one or more ratoon crops are harvested before the fields are plowed and replanted.

**SOFT SUGARS:** These are highly refined, dark colored, molasses-flavored sugars which are frequently called brown sugars. They have a relatively high content of mineral and other non-sucrose materials.

**SUCROSE:** A sweet crystallizable, colorless sugar which constitutes the principal sugar of commerce. Refined cane and beet sugars are essentially 100% sucrose. Under certain conditions sucrose breaks down to dextrose and levulose.

**SYRUP:** Concentrated clarified cane juice before crystallization.

**TEL QUEL:** Literally, such as (it is). When used describing sugar it means "as made," hence of a polarization usually varying among mills and producing areas.

**TURBINADO:** Direct consumption raw sugar of high polarization which must be dried in a granulator to a very low moisture content.